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PORT OF LIVERPOOL.



ANNUAL REPORT

OF THE

MEDICAL OFFICER OF HEALTH .

TO THE

PORT SANITARY AUTHORITY,

FOR THE YEAR

1913.

[ORDERED BY THE PORT SANITARY AND HOSPITALS COMMITTEE TO BE
PRINTED, 26TH MARCH, 1914]

LIVERPOOL :

C. TINLING AND CO., LTD., PRINTING CONTRACTORS, 53, VICTORIA STREET.

1914.

29

Lent to Prof. Greenwood,
School of Hygiene.

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PORT SANITARY AUTHORITY

OF

LIVERPOOL.

REPORT FOR THE YEAR 1913,

BY THE

MEDICAL OFFICER OF HEALTH.

In accordance with the General Order of the Local Government Board dated March 23rd, 1891, the following Report for the year ending December 31st, 1913, is made to the Liverpool Port Sanitary Authority.

The Report covers the work of the Port Sanitary Authority during the year, and includes a summary of the following measures:—

- (a) Measures adopted under the Cholera, Yellow Fever and Plague orders of the Local Government Board.
- (b) Measures taken to ascertain whether any Infectious Disease exists on board vessels arriving at the Port or has occurred during the voyage.
- (c) Methods of administration of the Orders of the Local Government Board with regard to imported foodstuffs.
- (d) Action taken with regard to the sanitation of vessels
- (e) Action taken under the Aliens Act.
- (f) Action taken in regard to Emigration.

The jurisdiction of the Authority is co-extensive with the limits of the Port, and includes within its area, not only the docks, quays, wharves, &c., belonging to the Mersey Docks and Harbour Board, the extent of which is set out below in tabular form, but also the Docks of the London & North Western Railway at Garston, as well as the lower portion of the Estuary of the Mersey and the sea within three miles of the coast line extending from Hoylake to Formby Point. And its powers are exercisable over any vessels lying within this area.

The estate of the Dock Board, exclusive of certain lands at Dingle, Trammere and Seaforth, is of the following dimensions:—

TOTAL WATER AREA AND LINEAL QUAYAGE OF THE LIVERPOOL
AND BIRKENHEAD DOCKS AND BASINS.

				Water Area.		Lineal Quayage.	
				Acres.	Yards.	Miles.	Yards.
Liverpool Docks and Basins	...	...		430	3,900	27	218
Birkenhead Docks and Basins	...	...		171	3,259	9	1,422
Total	...	...		602	2,319	36	1,640

AREA OF THE DOCK ESTATE.

Liverpool	...	...	...	...	1,171 $\frac{1}{4}$ acres.
Birkenhead	...	...	...	...	506 „
Total	...	...	...	...	<u>1677$\frac{1}{4}$ „</u>

The included map of the Liverpool Docks shows the character of the food-stuffs imported at each dock, and is slightly modified, with the kind permission of the Dock Board, from one recently published by them. The pathographical map exhibits the distribution of Cholera, Plague and Yellow Fever throughout the world during 1913.

It is not without interest to note that the Authority enters upon the fortieth year of its administration, having been originally constituted by an Order of the Local Government Board dated June 11th, 1874. On December 21st, 1892, the constitution of the Authority was under revision and an enquiry was held by the Local Government Board, at which representatives of the undermentioned Riparian Authorities were present, and the feeling was unanimous that the administration should rest as heretofore with the City Council of the City of Liverpool. The Authorities represented were the Town Councils of Birkenhead, Southport, Warrington, Widnes, Bootle, and Wallasey, the Local Boards of

Lower Bebington, Waterloo-with-Seaforth, Little Crosby, Hoylake and West Kirby, Bromborough, Garston, Toxteth Park and Great Crosby, the Rural Sanitary Authorities of Runcorn, Northwich, Warrington, Wirral, Chester and Prescott, and Runcorn Improvement Commissioners.

As the Order now stands the various Riparian Authorities included in the Port Sanitary District with the apportionment of expenses incurred by the Authorities, are as follows:—

Urban Sanitary Authority for City of Liverpool, 77·7 per centum.

Urban Sanitary Authority for Borough of Birkenhead, 11·2 per centum.

Urban Sanitary Authority for Borough of Bootle, 6·3 per centum.

Urban Sanitary Authority for Borough of Wallasey, 4·1 per centum.

Urban District Council of Lower Bebington, ·5 per centum.

Urban District Council of Bromborough, ·2 per centum.

In 1894 the Manchester Ship Canal was completed, and on October 16th, 1895, a conference was held at Manchester, Dr. Barry, of the Local Government Board, attending. As a result, by the Order dated 30th August, 1897, the Liverpool Port Sanitary Authority was recognised as the Authority for dealing with vessels from Cholera, Yellow Fever, and Plague-infected ports. By a voluntary arrangement vessels having Smallpox on board on arrival or during the voyage are dealt with in Liverpool. The Manchester Port Sanitary Authority pays to the Liverpool Authority a proportion of the expenses incurred, and a further charge of four guineas per week is made for each case of Smallpox treated in the hospital when removed from vessels bound for Manchester.

CHOLERA, PLAGUE AND YELLOW FEVER.

Cholera.

Cholera continued prevalent in its endemic seats in China, India and the East Indies, as is shown in the map.

As was anticipated, the epidemic of cholera that was raging amongst the Turkish troops in the vicinity of Constantinople spread to the

opposing forces, and these in turn carried the disease to their homes in Servia and Bulgaria. The invasion of Bulgaria by the Roumanian army resulted in the widespread infection of the latter country, and Greek troops also imported the infection into their native land, on their return, happily without causing any great extension.

From the Balkan States, Hungary became somewhat widely infected by the traffic along the Danube, the disease causing a small outbreak in the capital city Buda-Pest. Travellers developed the sickness in Vienna, and Marienbad on the borders of Germany.

The infection was also conveyed to Odessa and Kherson, whence other points in the interior of Russia became contaminated. Early in the year the Liverpool-bound steamship "Bosnian," from Constantinople, became infected, and two of the crew were landed at Odessa, where disinfection was carried out. On arrival in Liverpool all were found well.

Turkish troops carried Cholera with them on their return to various parts of Asia Minor, including the ports of Smyrna and Beyrout.

The following ports were scheduled for medical inspection as Cholera-infected:—Constantinople, Smyrna, Salonica, Braila, Galatz, and Kherson. Vessels from Beyrout were also inspected.

Plague.

As has been stated in previous reports, Plague tends to spread from certain "enzootic" centres, where, amongst wild rodents, such as marmots, susliks and ground squirrels, the disease is constantly present.

If rats become infected from the wild rodents, the disease becomes disseminated, owing to their association with man and the manner in which rats accompany man upon his travels, more especially on ship board but also by rail. This is what probably occurred before the outbreak in Hong Kong in 1894, from which port the present almost world-wide pandemic has spread, the original enzootic focus having probably been situated in the interior of China and Mongolia.

The process is again occurring in connection with the enzootic centre in the Steppes, North of the Caspian Sea, and in the vicinity of the mouths of the Volga, where the disease has long been prevalent amongst men, though only recently shown to be due to infection derived from

susliks and other wild rodents. It was probably from this centre that the " Black Death " of the Middle Ages originated as it was here in the vicinity of Tsarev that its presence was first noted. It would appear that rats have become infected in this neighbourhood, for the disease has rapidly spread in the Province of the Don Cosacks, reaching the port of Rostov-on-Don. The neighbouring Province of Ekaterinoslav, with its important grain-exporting ports, has been declared, in a circular of the Russian Government, to be threatened. A tendency to spread up the Basin of the Volga has also been shown.

In China, Indo-China, Java, India, Persia, Egypt, Morocco and parts of East Africa, Plague is widely spread both in the interior and in many of the ports. In a number of Levantine ports cases occur from time to time. With the extension of railways, the hinterlands will probably become affected. Cases have occurred from time to time in Beyrout, but the disease made its appearance this year in certain villages in the Lebanon; Massowah, Tripoli, Benghazi, Trebizond and the Piraeus (Athens) were infected this year, the infection in the last instance appearing to have been derived from a vessel from India.

In the Atlantic basin the disease appeared in a number of ports in the River Plate, of which Rosario and Monte Video are of importance. Plague-infected rats were found on vessels from Buenos Ayres, which reached the European ports of Trieste, Amsterdam, and Hamburg.

Various other centres in the interior of the Argentine, Uruguay and Brazil, were infected, as were the ports of Rio de Janeiro, Bahia and Pernambuco. A number of cases occurred in the island of Teneriffe; this is a menace to Liverpool, as the cargoes brought from the Canary Islands, mainly bananas, being in crates and boxes are very likely to convey infected rats.

In the Pacific Coast of South America, Plague appeared in a number of Chilian and Peruvian ports; Plague continues epidemic in Guayaquil, the port of Ecuador; rat Plague appeared in the port of Seattle in the United States; with the opening of the Panama Canal, these ports will be brought in much closer communication with this country.

Plague-infected rats were found in London and Suffolk during the year 1913.

No vessels, on which Plague had occurred amongst men, reached Liverpool during 1913, but unceasing vigilance was directed to all centres of infection menacing the port. One suspected case of Plague was removed at Liverpool, but proved non-infectious.

The following ports were scheduled as Plague-infected, and all vessels arriving thence were subjected to medical inspection, etc.:—Bombay, Karachi, Mangalore, Calcutta, Rangoon, Bassein, Bangkok, Mombassa, Port Said, Alexandria, Beyrout, Mersyne, Casablanca, Teneriffe, Bahia, and Rio de Janeiro.

Rat Destruction, etc.

The very important part played by rats in the dissemination of Plague has been indicated in the preceding paragraphs, and was fully recognised by the International Sanitary Convention held at Paris in 1911-1912. The system employed by the Port Sanitary Authority to prevent the importation of Rat-plague has been somewhat improved during the course of the year, and its value has been further exemplified within the past few months. In addition to the written questions put by the Boarding Medical Officers to the masters of vessels from Plague-infected Ports as to the occurrence of Plague or any mortality amongst the rats on board the Sanitary Inspectors put similar questions on all vessels from foreign.

As those in charge of the vessel may be, and in fact often are, unaware of the presence of an epizootic amongst rats on board, rat searchers visit the vessel and search the storerooms, and such portions of the cargo-spaces as are accessible, for the presence of dead rats; enquiries are at the same time put to the stevedore, etc. Later on, as the cargo is discharged, further visits are made. The method has on several occasions, resulted in the discovery of an epizootic of Plague.

Rat-catchers are also placed on board the vessels and the rats trapped are forwarded to the Bacteriologist after having been dipped in petrol to destroy fleas. This method is valuable, as not only are the rats obtained for examination, but the persistent trapping results in a very considerable reduction in the number of rats on shipboard.

The number of rats trapped during 1913, as shown in the table on page 11, was 8,901, bringing the total number of rats trapped since 1902 to 48,468. On examination, only one of these proved suspicious of Plague.

The s.s. "City of Lahore" left Bombay on April 13th, 1913, with a cargo of grain; on arrival at Marseilles, she was fumigated by the Clayton apparatus, one dead rat being found subsequently. No sickness occurred during the voyage, and on arrival here on May the 13th all were found well on board. On May 17th information was received from the City Bacteriologist that one of the rats trapped on board presented signs suspicious of Plague. The vessel was at once fumigated throughout, the holds being then empty. The vessel was allowed to proceed to Birkenhead Graving Docks on the following day.

On the 24th May information was received that Sheik Kekeer Sheik Mahommed, a native fireman, was severely ill with symptoms of Bronchitis. He was removed to New Ferry Hospital on the same day, and was found to have Pneumonia. The crew's quarters were disinfected.

On May 28th information was received that the fireman's cook had died suddenly. Three other firemen were removed to the Port Sanitary Hospital in the Birkenhead Fever ambulance with symptoms of Pneumonia. The body of the fireman's cook was removed to the Seacombe Mortuary on the 29th, where a Post-mortem was made by Professor Beattie. This showed that the cause of death was Pneumonia, caused by the Pneumococcus, and not the *Bacillus pestis*.

No further cases of Pneumonia occurred, and the vessel sailed for India on May 31st. The four cases removed to the Hospital recovered, though two of them were very seriously ill.

The following section was included in the Corporation Act, 1913, to prevent live rats being brought ashore by rat-catchers and others, this practice being a possible means of introducing Plague into the City:—

32.—No live rats shall be brought into the City from any ship in the Port of Liverpool except for the purposes of the Port Sanitary Authority, and any person offending against this enactment shall on conviction be liable to a penalty not exceeding forty shillings.

The number of rats trapped per vessel varies; the longer the voyage, the greater the number of rats, as a rule, as is shown by the following figures.

Vessels from W. Coast of S. America				402 rats on 13 vessels, average	31 rats.
„	„	River Plate	2,044 rats on 125 vessels, average	15.5 rats.	
„	„	Burma	270 „ „ 25 „ „	10.8 „	
„	„	India	712 „ „ 67 „ „	10.7 „	
„	„	Levant	382 „ „ 37 „ „	10.3 „	
„	„	Other Areas	258 „ „ 18 „ „	14.3 „	
Total				4,068	285

Rat-catchers have been employed since 1910 to catch rats in the freight sheds and warehouses on the line of docks, the numbers for the past three years are:—

				<u>1911</u>	<u>1912</u>	<u>1913</u>
North Docks	...	...	...	219	781	710
South „	...	...	...	305	307	72
Birkenhead and Garston	...	...	...	410	10	176
Total				<u>934</u>	<u>1,098</u>	<u>958</u>

None of these rats showed any evidence of Plague.

In addition to the number of rats caught by the Authority, large numbers of rats are caught by shipowners and warehouse-keepers, who employ their own rat-catchers, or else rat-catching firms. Returns received from one such firm state that 10,629 rats were trapped by them during the year 1913.

A complete return of the rats caught by the Health Authority in the City and Port of Liverpool will be found in the Appendix.

TABLE 1.
Table showing the number of Rats obtained on ships and quays by the Authority's rat-catchers.

Year.	NUMBER OBTAINED.			NUMBER			
	From Ships.		Total.	EXAMINED.		DESTROYED.	
	From Quays.	From Ships.		From Quays.	From Ships.	From Quays.	Total.
1902	—	1,946	1,946	—	703	—	1,243
1903	—	5,083	5,083	—	560	—	4,523
1904	—	4,632	4,632	—	3,332	—	1,300
1905	—	6,651	6,651	—	5,251	—	1,400
1906	—	2,979	2,979	—	2,979	—	—
1907	—	3,169	3,169	—	1,937	—	1,232
1908	73	1,871	1,944	73	1,564	—	307
1909	480	2,029	2,509	356	1,413	124	740
1910	77	1,976	2,053	76	1,554	1	423
1911	934	3,097	4,031	920	2,007	14	1,104
1912	1,098	3,472	4,570	1,054	2,311	44	1,205
1913	958	*7,943	8,901	938	3,280	20	4,683
	3,620	44,848	48,468	3,417	26,891	203	18,160

* 3,875 of these were obtained after fumigation.

Fumigation of Vessels.

Without doubt, the most efficacious method of protection against rat-plague is the systematic fumigation of all vessels trading with infected ports. It is the recommendation of the Paris Convention that this should be carried out at intervals not exceeding six months.

A number of foreign and colonial authorities require the production of certificates of deratisation; in some cases the deratisation must be performed every six months; in other cases the deratisation must be performed every voyage prior to the vessels loading cargo at the first port of loading; vessels have been fumigated at Liverpool during the year 1913 for certificates required by the Panama, Cuban, Philippine and Australian Authorities, and also vessels trading with Tenerife.

Altogether 73 vessels were fumigated at Liverpool in the course of the year by, or under the supervision of the Authority. In every case a careful search was made to discover the number of rats destroyed, the total number discovered being 3,875. The method employed in all cases was burning sulphur in open pots, a photo of one of which is shown in the appendix. About 3 per cent. of Sulphur Dioxide is generated, and the exposure is never less than 12 hours, which allows the gas to penetrate into distant corners. 11b. of sulphur per 1,000 cubic feet generates 1·12 per cent. of Sulphur Dioxide. This method is the one employed in the United States, and has recently been carefully investigated by the Medical Officer of the Port of New York, who states that this amount will destroy both rats and insects.

It is important that the fumigation should not be confined to the holds, but the storerooms, and all places where rats may be harboured, should be subjected to fumigation. The numbers killed by fumigation on the s.s. "Muraji" exemplify this. Cargo spaces, 102; bunkers and shaft tunnel, 42; passenger quarters, 20; crew's quarters, etc., 26; total, 190. The frequency with which rats are to be found in store-rooms is indicated by the complaints which have been received from certain firms in the city as to rats being found in empty barrels and cases, which have been returned from certain vessels. The danger of the introduction of Plague in this manner should be noted.

The repeated fumigation of vessels results in a very large reduction in the number of rats on board. Many vessels that had been subjected

within the previous six months to fumigation, whilst empty, were found to be entirely free from rats on re-fumigation at Liverpool. The following figures show the reduction in rats on board vessels fumigated twice in the course of twelve months.

13 Vessels Fumigated twice at Liverpool.

(a) On first fumigation. (b) On second fumigation.

Rats found	1,172	414
Average per vessel	90	32

It should be noted that in several of these vessels only the holds of the vessels were fumigated, so that probably sufficient rats would remain on board to replace the rat population in the course of a few months.

Information was obtained with regard to 369 vessels visiting the port that had been subjected to a process of fumigation within the previous six months. In many instances, no definite information could be obtained, but in others it was evident that the results were quite ineffectual, more especially when the process was carried out with the cargo in situ. The following table refers to vessels with regard to which accurate information was received and compares (1) vessels fumigated abroad with holds full; (2) vessels fumigated abroad with holds empty; (3) vessels fumigated at Liverpool with holds empty. The vessels are of comparable size and character.

Results of Fumigation of Vessels Bound to Liverpool

First Five Months of 1913.

TABLE A.--VESSELS FUMIGATED ABROAD WITH HOLDS FULL.

Method of Fumigation.	A. Apparatus.	B. Apparatus.	Apparatus not known.
Number of vessels	10	3	18
Number of dead rats stated to have been found abroad	34	6	78
Number of dead rats found on searching at Liverpool	25	1	15
Total	59	7	93
Average per vessel	6 rats.	2·3 rats.	5·1 rats.

RATS TRAPPED ON ABOVE VESSELS ON ARRIVAL AT LIVERPOOL
ABOUT TEN DAYS LATER.

Method of Fumigation.	A. Apparatus.	B. Apparatus.	C. Apparatus.
Average per vessel	8.5 rats.	not trapped.	10.5 rats.

TABLE B.—VESSELS FUMIGATED ABROAD WITH HOLDS EMPTY.

Method of Fumigation.	A. Apparatus.	C. Pots and Sulphur.
Number of vessels	1	32
Number of rats stated to have been found abroad	40	1270
Average per vessel	40 rats	40 rats

TABLE C.—RESULTS OF FUMIGATION BY POTS AND SULPHUR AT
LIVERPOOL.

Method of Fumigation.	Holds only.*	Complete Deratisation.
Number of vessels	18	14
Number of rats	254	850
Average of vessel	14 rats	61 rats

* Most of these vessels have been subjected to repeated fumigations with empty holds during the preceding 12 months ; several were entirely free of rats.

The experience of former years, that fumigation with empty holds has been the only satisfactory method, has been amply borne out. Sulphur fumigation when the holds contain cargo is unsatisfactory partly by reason of the liability to do damage, but mainly because cargo, such as grain in bulk, will absorb such large amounts of sulphur dioxide as to protect the rats, etc., from the influence of the gas. Forms of apparatus which depend upon the action of carbon monoxide or of deficiency of oxygen are free from these objections, but their use is not free from danger to life.

Yellow Fever.

This disease is limited to certain areas in the West Coast of Africa and the Tropical regions of South America, principally Brazil and Mexico. An extensive focus in Guayaquil will shortly be brought into much closer communication, following the opening of the Panama Canal.

Three cases of Yellow Fever occurred on Liverpool-bound vessels from the Amazon and the West Coast of Africa.

Smallpox.

Ten cases of Smallpox were landed at Liverpool in the course of 1913 out of a total of 24 cases notified to Port Sanitary Authorities throughout England and Wales. A further three cases and two suspected cases were landed at other ports from Liverpool-bound vessels, whilst two cases reached the city overland from a vessel from Rangoon.

The source of infection of these cases is shown in the subjoined table:—

TABLE 2.

	Landed in Liverpool.			Landed elsewhere.
Spain	1	2
Italy	—	1
Smyrna	1	—
New York	1	—
Rio de Janeiro	1	—
India	6 in one vessel	8
			—	—
			10	11
			—	—

Total 21 cases.

Seven hundred and twenty persons were vaccinated on the above vessels. the names and addresses of all contacts were forwarded to the authorities of destination; these lists were in several cases very extensive, totalling over 700 in one case, and over 1,000 in another. Extensive disinfection had also to be carried out. In nine of the ten cases the disease was either discovered or diagnosed by the Boarding Medical Officers. Three suspected cases were also removed to hospital.

The largest outbreak was that on the s.s. "City of Sparta," from Karachi. The vessel was visited on arrival at Liverpool and all found well. She sailed for Newport, and here one of the lascar crew was taken ill. The incubation period of the disease pointed to Marseilles being the source of the infection, and Smallpox was in fact prevalent there at the time. The nature of the sickness was not at first recognised, and the man infected six members of the crew who were re-vaccinated too late to completely prevent the development of the disease, though their attacks were exceedingly mild. These cases were discovered at Liverpool in the course of daily medical inspections. Several cases of smallpox occurred at Newport, and amongst those infected was a sailor on a vessel outward bound from Newport. He was landed at Lisbon, with a severe confluent attack, not having been re-vaccinated; he was discharged from hospital there to the s.s. "Victoria" whilst still in an infective condition, but was fortunately isolated by the ship's surgeon in the infectious hospital on the s.s. "Victoria." The links in this chain of events were discovered on the arrival of this vessel at Liverpool.

This outbreak emphasises the need for hospital accommodation on all ocean-going vessels. If the first case had been promptly isolated pending diagnosis, the probability is that no further cases would have occurred. But there was no hospital accommodation on the s.s. "City of Sparta."

Enteric Fever.

Thirty-eight cases of Enteric Fever were imported into Liverpool during 1913 from overseas, compared with thirty-six in the previous year. A further fifteen cases removed to hospital as suspected Enteric Fever proved to be suffering from other diseases. Of all cases occurring in Liverpool, those imported by ship formed 24·8 per cent.

Information with regard to the action taken in dealing with imported shellfish will be found on page 87, but it is gratifying to note that only two cases of Enteric Fever in Liverpool were attributable to imported mussels; this reduction is due to the action taken in previous years with regard to contaminated mussels imported from Ireland.

The ports from which vessels introducing cases of Enteric Fever came are shown in the subjoined table.

TABLE 3.

	Landed in Liverpool and Manchester.				Landed abroad.
North Europe				2	—
Canada				7*	—
New York				6	—
East Coast of United States				2	—
Mexican Gulf				4	—
Para				1	—
River Plate				7	9
W. C. S. America				3†	—
Spain and Mediterranean				3‡	2
India and Burma				4	6
West Coast Africa & Canary Islands				2	1
Australia				—	2
				<hr/> 41	<hr/> 20

‡ One case removed to hospital at Manchester. * One case removed to Bootle Hospital. † One case convalescent and allowed to proceed home.

Many of the above were passengers who had been infected before boarding the vessel; one was infected from oysters that he had partaken of on shipboard; a number of sailors were infected whilst in foreign ports. Five case occurred on board the s.s. "Highland Enterprise"; this again emphasises the need for the provision of hospital accommodation on board all ocean-going vessels.

The manner in which imported cases may spread infection is shown by the case on the s.s. "Anselm"; the patient only began to be ill immediately before arrival in Liverpool. He returned home, and the nature of the sickness not being recognised, he infected his wife, three children and a lodger.

Measles and German Measles.

During the year the sanction of the Local Government Board was obtained to the scheduling of these two diseases amongst those notifiable on shipboard. The disease was made notifiable for the following reasons.

1.—The number of cases on board ship has been steadily increasing.

1895 to 1904	15·2 cases per annum.
1905 to 1909	18·8 „ „
1910	25·
1911	16·
1912	61·

2.—The disease is very infectious, and, amongst young children, has a heavy mortality. The majority of cases are immigrants travelling to Norway, Germany, etc., or to other parts of England, and the risk of spreading infection in railway trains, boarding houses, etc., is considerable.

3.—It has been the practice of the Authority to isolate these cases whenever consent could be obtained. Under the Liverpool Corporation Act, 1912, it is an offence to expose a child, suffering from Measles or German Measles, in the streets, or other public place.

4.—Occasionally there is a close resemblance between the initial rash of Smallpox and that of Measles. Cases of Smallpox might in this way fail to be notified.

Cerebro—Spinal Meningitis and Poliomyelitis.

One case of Cerebro-Spinal Meningitis was removed from a vessel from New York, and a fatal case of Poliomyelitis occurred in the person of a seaman from Stockholm. A specially severe type of Poliomyelitis is prevalent in Sweden.

Anthrax.

Seven cases of this disease (see page 20) occurred in the City during the year. The number of cases occurring during the past few years has remained low, owing to effort which have been made by the Sanitary Authorities of Liverpool.

An increased knowledge of the disease and the channels of infection have materially altered the incidence amongst workers in Liverpool, owing to prompt recognition and early treatment.

The workers most often affected are wool sorters, dock labourers, and those engaged in tanneries.

It is interesting to note that two cases, not included in the above figures, occurred in neighbouring towns, and were admitted into the Liverpool hospitals for treatment. These cases occurred in tanneries in Runcorn and Litherland. The Medical Officers of Health of these districts were promptly notified.

Contamination of Cattle Foods.—From time to time cases of Anthrax occur amongst cattle in the City of Liverpool, and it seems fairly certain that infection is carried in the food products of the animals. The contamination of cattle food products with the spores of the bacillus during shipment in foreign ports, during the voyage or after discharge on the

quays has engaged the attention of the Authority for several years. The inspectors of the Authority have always kept this matter before them during their visits of inspection to ships; and enquiries have been made as to the possibility of contamination of cattle food products.

It is well known that sweepings from vessels which have carried grain, meals, seeds, etc., are usually divided amongst the consignees, and frequently these sweepings, together with any grain which may have been damaged, are sold for poultry and cattle food.

In vessels carrying mixed cargoes, it is quite usual to find that hides, wool and other animal products have been carried in the same holds as the grain, and it is quite conceivable that the spores from the animal products find their way into the food products.

Our efforts to bring about an improvement in the method of stowing these products has so far resulted in failure; attempts, even, to minimise the risk of food infection on the dock quays has not met with success. In one direction, however, we are glad to say there is a possibility of great improvement, and those interested have lent a willing hand. This is in the direction of sterilisation; the matter is, however, only in the initial stage, and we hope to report further on the matter.

Leprosy.

Leprosy is comparatively rare in this country, but abroad, in such countries as China, India, Asia Minor, etc., the disease still lingers amongst the community.

The cases which occur from time to time in this country arise, as a rule, in persons who have been living here for some time, and the diagnosis has only been made when the patient has applied at one of the hospitals for medical treatment. During the year two cases came under the notice of the department, the particulars of which are as follows:—

A Syrian, aged 23 years, on the way from his home near Jaffa to America, came to Liverpool, and sailed thence to Philadelphia about May, 1912. At that time there was no evidence of the disease. During his stay in the United States, the disease gradually developed and he was kept in hospital, in Cleveland, for ten weeks. Subsequently he was deported from the country, under the U.S. Immigration Laws, and was landed in Liverpool in August, 1913. He was removed to the Port Isolation Hospital not only in his own interests, he being in a delicate state of health, but also that the Shipping Company might make the necessary arrangements for his transference to his home in Jaffa. This was subsequently carried out with every care.

The second case was that of a Chinaman, a native of Canton, aged about 27 years. He was said to be a laundry-man who came to Liverpool about three years ago. He worked in Manchester for about a year, and was subsequently admitted to hospital. The man was shunned by his countrymen and, pending arrangements for his deportation, was removed to the Port Isolation Hospital, from which Institution he was discharged on 18th October, and placed on board a vessel which sailed immediately for China.

TABLE 4.
CASES OF ANTHRAX ARISING DURING THE YEAR IN CONNECTION WITH THE
HANDLING OF ANIMAL PRODUCTS.

Date.	Sex.	Occupation.	Material.	Origin of Material.	Situation of Pastule.	Severity and result.
1913. Feb. 25	M.	Dock labourer	Hides.....	Pernambuco	Side of neck	Recovery.
July 18	M.	do.	do.	W. Africa	Right cheek	Recovery.
July 27	M.	do.	do.	do.	Right cheek	Recovery.
Aug. 20	M.	do.	do.	do.	Forehead, over eye.....	Recovery.
Sept. 23	M.	Wool merchant	Persian Wool*.....	Persia	Right side of neck	Recovery.
Oct. 17	M.	Dock labourer	Hides.....	W. Africa	Right cheek	Recovery.
Dec. 10	M.	Hide washer in tannery...	do.	E. Africa	Forehead	Recovery.

* This Persian wool (sample 1427) was found by the City Bacteriologist to contain Anthrax Spores.

Phthisis.

Under the Public Health (Tuberculosis) Regulations, 1911, the names and addresses of persons suffering from Pulmonary Tuberculosis are notified by ships' surgeons on arrival. During 1913, 142 cases were notified. A certain proportion of these are discovered by the Boarding Medical Officers during the course of medical inspections of vessels from infected ports.

The names and addresses of those resident in the United Kingdom are forwarded to the Medical Officers of Health of the districts of destination or residence. In the case of persons resident in Ireland, the names are forwarded to Lady Aberdeen, so that sufferers may receive the assistance of the Irish Anti-Tuberculosis Association. A not inconsiderable number of patients are persons who are in passage to the Continent.

Disinfection is carried out in all instances, special attention being directed to infected bedding. No action is taken which would be in any way detrimental to sufferers in obtaining further employment.

A small number of cases of non-pulmonary tuberculosis are also reported.

The Port Isolation Hospital.

The Isolation Hospital was erected in 1877 on land adjoining the Quarantine area, and is used for the accommodation of sea borne cases of infectious disease.

When Plague threatened our Port in 1901 and 1902, the hospital was extended by the addition of a more permanent and modern pavilion; also suitable laundry, disinfecting apparatus and nurses' quarters were added.

This Hospital is not large enough to accommodate all sea borne cases, which have increased in number with the trade of the Port; it is therefore necessary to remove cases of the usual type found in the City to institutions where these diseases are already accommodated. The large majority are removed to Liverpool hospitals, but cases have, although very rarely, been removed to Birkenhead, Bootle and Wallasey Hospitals when the vessel was berthed in the area of these authorities, and when such removal could be conveniently effected.

Urgent administrative conditions in connection with Liverpool, Birkenhead, and any of the neighbouring authorities have sometimes in the past, though rarely, required the hospital to be used for the isolation of cases which may not come strictly under the jurisdiction of the Port Sanitary Authority.

TABLE 5.

INFECTIOUS DISEASE.

The actual number of cases of infectious sickness landed from vessels arriving in the Port of Liverpool during the years 1912 and 1913, and the comparison with the average of the preceding 10 years, is shown in the following Table:—

Diseases.	Number of Cases.		Average for the 10 years preceding 1912.
	1912.	1913.	
Smallpox	2	10	9·8
Scarlatina	18	20	11·2
Cerebro Spinal Meningitis	1	1	0·2
Poliomyelitis	0	1	0·0
Enteric Fever	36	38	36·7
Do. (suspected)	8	22	1·0
Diphtheria	14	14	5·1
Measles	61	36	18·6
German Measles	0	4	—
Whooping Cough	0	0	0·1
Erysipelas	9	4	4·7
Chicken Pox	7	9	5·8
Cholera and Choleraic Diarrhœa .	0	0	0·6
Yellow Fever	1	0	0·4
Plague	1	0	0·7
Suspected Plague	4	2	5·7
German Measles	2	4	1·0
Puerperal Fever	2	1	0·0
Phthisis	78	142	0·0
Dysentery	1	0	0·6
Totals	245	308	102·2

TABLE 6.

INFECTIOUS DISEASE.

The number of cases of infectious sickness reported to have occurred on Liverpool-bound ships during the years 1912 and 1913, and which were disposed of prior to the arrival of the vessel at this port, and the average of such cases for the preceding 10 years, are as follows:—

Diseases.	Number of Cases.		Average for the 10 years preceding 1912.
	1912.	1913.	
Smallpox	27	11	13·9
Scarlatina	0	0	1·5
Cerebro Spinal Meningitis	2	0	0·0
Enteric Fever	37	8	11·2
Diphtheria.....	3	5	2·1
Measles	5	11	6·6
German Measles ...	0	1	0·9
Erysipelas	0	1	0·5
Chicken Pox	6	4	2·7
Cholera and Choleraic Diarrhœa..	1	2	5·6
Yellow Fever	5	3	5·1
Plague	14	0	1·4
Suspected Plague.....	1	0	1·7
Phthisis.....	11	10	0·0
Totals..	112	56	53·2

The following Table gives the particulars of the 164 vessels on board, with the measures adopted in each case:—

TABLE 7.

Date 1913.	Name of Vessel.	Where from.	Nature of Sickness.	Hospital to which Patient was removed.
Jan. 2	El Uruguayo	La Plata ...	Enteric Fever	Fazakerley ...
Jan. 7	Hesione ...	River Plate ..	Enteric Fever	... ..
Jan. 8	Campania ...	New York ...	Scarlatina ...	Fazakerley ...
Jan. 8	do. ...	do. ...	Measles ...	Fazakerley ...
Jan. 8	Bosnian ...	Constantinople	Cholera ..	... ..
Jan. 21	Deseado ...	River Plate...	Puerperal Fever	Royal Infirmary
Jan. 27	Victoria ...	Callao ...	Measles ...	... ..
Feb. 1	Baltic ...	New York ..	Diphtheria ...	... ..
Feb. 5	Campania ...	New York ...	Suspected Enteric Fever	Netherfield Rd.
Feb. 7	Tennyson ...	Campania ...	Enteric Fever	Grafton Street

reported on their arrival as having or having had Zymotic Disease

REMARKS.

The patient, a seaman, was removed to Hospital, and the vessel and bedding disinfected.

Patient left at Las Palmas on the homeward passage.

The patient, a steward, was removed to Hospital, and the vessel and bedding disinfected.

The patient, a second-class passenger, was removed to Hospital, and the vessel and bedding disinfected.

When this vessel arrived in the Port, it was ascertained that two cases of Cholera had occurred amongst the crew, two days and five days respectively after her departure from Constantinople on November 15th. These cases were removed to Hospital at Odessa, where also the vessel was thoroughly disinfected, and a Bacteriological examination of all members of the crew was made. A further disinfection was performed at Kavak. On arrival at Liverpool the crew and passengers were medically examined, and all were found well.

The patient, a third-class passenger, was removed to the Royal Infirmary.

A child passenger landed at Lisbon on the homeward passage.

The patient, a passenger, was left at Queenstown on the homeward passage.

The second officer, having Enteric Fever, was removed to Hospital, and the vessel and bedding disinfected.

The patient was removed to Hospital and the vessel and bedding disinfected.

Date 1913.	Name of Vessel.	Where from.	Nature of Sickness.	Hospital to which Patient was removed:
Feb. 8	Conway ... Training Ship	in the River	Scarlatina ...	Grafton Street
Feb. 10	Bulgarian ...	Alexandria ...	Diphtheria ...	... ..
Feb. 13	Cymric ...	Boston ...	Measles ...	Park Hill ...
Feb. 14	Fabian ...	Alexandria ...	Diphtheria ...	Fazakerley ...
Feb. 15	Saxonia ..	Boston ...	Diphtheria ...	Fazakerley ...
Feb. 28	Carpathia ...	Boston ...	Measles ...	Park Hill ..
Mar. 3	Baltic ...	New York ...	Measles ...	... ..
Mar. 7	Dakar ...	West Coast of Africa	Chicken-pox	Fazakerley ...
Mar. 10	Sailor Prince	Syrian Ports	Enteric Fever	... ..
Mar. 10	Haverford ..	Philadelphia	Enteric Fever	Netherfield Rd.
Mar. 10	Empress of Ireland	St. John ...	German Measles (2 cases)	Fazakerley ...
Mar. 10	Carmania ...	New York ...	Measles ...	Park Hill ...

REMARKS.

One of the boys was brought ashore and taken to the City Hospital. Disinfection carried out by the ship's officers.

One of the stewards, suffering from Diphtheria, was left in Hospital at London.

The patient was removed to Hospital and the vessel disinfected.

One of the crew, a seaman, having Diphtheria, was removed to Hospital, and the vessel and bedding disinfected.

The patient, a trimmer, was removed to Hospital, and the vessel and bedding disinfected.

A child passenger removed to the City Hospital, Park Hill.

Patient was landed at New York on the homeward passage.

The patient, a Kroo boy, was removed to the Hospital, and the vessel and bedding disinfected.

The patient, convalescent on arrival, was allowed to proceed to his home, the vessel and bedding being disinfected.

A deck boy who had gone ashore to the Boys' Home, Gt. George Square, was removed to the City Hospital, Netherfield Road.

The patients, two children, were removed to the City Hospital, Fazakerley, and the vessel and bedding disinfected.

Patient removed to the City Hospital, Parkhill.

Date 1913.	Name of Vessel.	Where from	Nature of Sickness.	Hospital to which Patient was removed.		
Mar. 10	Gloucester- shire	Rangoon ...	Small-pox (7 cases)	...	...	...
Mar. 18	Barnesmore	Baltic Ports	Enteric Fever	Bootle	...	...
Mar. 18	Darro ...	S. American Ports	Diphtheria ...	...	...	...
Mar. 27	Campania ...	New York ...	Measles ...	Grafton	...	...
Mar. 28	Baltic ...	New York ...	Enteric Fever	...	...	...
Mar. 31	Grampian ...	St. John ...	Enteric Fever	Netherfield Road		
Mar. 31	Avetoro ..	Teneriffe ...	Suspected Rat Plague	...	...	...
April 1	Drina ...	Buenos Ayres	Small-pox ...	...	...	...

REMARKS.

This vessel left Rangoon on February 5th. About February 20th a native fireman was isolated on the poop, with a suspicious eruption, but was seen by two Medical Officers at Suez and pronounced not to be Small-pox. Another native fireman developed a similar eruption about February 24th. The vessel was again inspected at Marseilles and passed. On the 5th and 7th of March, the carpenter and storekeeper were taken sick with pains in the back and chest. On arrival at London on March 8th the carpenter was removed to Orsett Small-pox Hospital, and on March 10th and 11th two stewards, who had come to Liverpool by rail from London, were removed to Fazakerley Hospital suffering from Small-pox. The storekeeper and a native fireman, as well as the two natives before mentioned, were removed to the Quarantine Hospital at Denton, all suffering from Small-pox. The crew were re-vaccinated and bathed, and their effects disinfected, and the vessel fumigated throughout whilst in London. On arrival at Liverpool on March 18th, the vessel was inspected, and the crew, numbering 91 natives and 41 Europeans, were found well.

One of the crew was admitted to the Bootle Hospital. The vessel and bedding were disinfected.

A saloon passenger was removed in a private Ambulance to his home in the City. Vessel and bedding disinfected.

A child passenger, removed to the City Hospital, Grafton Street.

A passenger who had gone to his home in the city was reported as having Enteric Fever. Disinfection of vessel and bedding were carried out.

The patient, a seaman, was removed to Hospital, and the vessel and bedding disinfected.

This vessel arrived in Liverpool on March 29th, on the 31st, two dead rats were found in the cargo spaces and 13 more were found on the quays amongst refuse from the holds. The vessel was fumigated throughout on the same day, and a further 50 rats were destroyed. Forty rats were sent to the University for Bacteriological examination, but no evidence of Plague was discovered in them.

A Portugese steerage passenger suffering from Small-pox, was removed to Hospital at Santos, where disinfection was carried out.

Date 1913.	Name of Vessel.	Where from.	Nature of Sickness.	Hospital at which Patient was removed.
April 2	Manco ...	Iquitos ...	Yellow Fever (2 cases)	... ..
April 9	Montcalm ...	St. John ...	Measles ...	... ..
April 11	Anselm ...	Para ...	Measles ...	... ..
April 13	Caronia ...	Alexandria ...	Scarlatina ...	Netherfield Road
April 14	Tunisian ...	St. John ...	Diphtheria ..	Fazakerley ...
April 14	City of Athens	Karachi ...	Enteric Fever	Netherfield Road
April 16	Deseado ...	Buenos Ayres	Chicken-pox	... ..
April 17	Cuban .	West Indies	Enteric Fever (2 cases)	Netherfield Road
April 19	Laurentic	New York ...	Measles ..	Fazakerley ...
April 20	Franconia ...	New York ...	Measles ...	... ..
April 20	do. ..	do. ...	Suspected Cerebro Spinal Meningitis	Fazakerley ...

REMARKS

Two of the crew (trimmers), suffered from Yellow Fever on the homeward passage to Liverpool, one of these proving fatal the other had recovered.

The fourth engineer, suffering from Measles, was removed to his home in Bootle.

Patient left in Hospital at Lisbon.

The patient, a fireman, was removed to Hospital, and the vessel and bedding disinfected.

The patient was removed to Hospital and the vessel and bedding disinfected.

The patient, the ship's surgeon, was removed to Hospital, and the vessel and bedding disinfected.

The case was left in Hospital at Buenos Ayres on the homeward passage.

Two of the crew, who were removed to Hospital, and the vessel and bedding disinfected.

The patient, a child passenger, was removed to the City Hospital, Fazakerley.

The patient, a child passenger, proceeded with the parents to their home in Leigh.

One of the crew, a seaman, who was removed to the City Hospital, Fazakerley.

Date 1913.	Name of Vessel.	Where from.	Nature of Sickness.	Hospital to which Patient was removed.
April 23	Olympia	Bombay ...	Suspected Plague	New Ferry ...
April 24	Catherine Park	Bahia- Blanca	Enteric Fever	... ..
April 26	Baltic	New York ...	Scarlatina ...	Fazakerley ...
April 26	Mahronda ...	Rangoon ...	Chicken-pox (3 cases)	New Ferry ...
April 29	Orita	Callao ...	Suspected Enteric Fever	Fazakerley ...
April 29	City of Marseilles	Karachi ...	Chicken-pox	... ..
April 29	do, ...	do. ...	Enteric Fever	... ..
May 2	Adriatic ...	New York ...	German Measles	Fazakerley ...
May 9	Celtic ...	New York ...	German Measles	... ..

REMARKS.

This vessel arrived at Liverpool on the 23rd of April, and upon medical inspection a Lascar fireman was found with a Bubo in the left groin. The ship's Surgeon reported that about the 3rd April he had isolated the man on shipboard when he had fever and a very tender bubo. He was removed to the Port Hospital in the ship's boat as a suspected case of Plague; he was then convalescent, and a further examination failed to confirm the diagnosis. The vessel was disinfected and allowed to dock, and was breasted 6 feet off the quay. Rats guards being placed on all ropes, and the gangways lifted except during the discharge of cargo. A careful watch was kept during the unloading, and eighteen dead rats were found in the holds, all except four being too much decomposed for examination. These four, together with eleven other rats trapped in the holds, were sent to the City Bacteriologist, but all proved to be healthy. The vessel left with part cargo for Glasgow on April 26th, the Medical Officer of that port being informed of the circumstances.

The patient was left at St. Vincent on the homeward passage, where disinfection was carried out.

A saloon passenger, who was removed to Hospital, and the vessel and bedding disinfected.

The patients, three lascars, were removed in the ship's boat, to the Port Hospital, and disinfection of the vessel and bedding carried out.

One of the stewards, suffering from Enteric Fever, was removed to Hospital, and the vessel and bedding disinfected.

One of the native crew, having Chicken-pox, was left in Hospital at Port Said on the homeward passage.

A saloon passenger left in Hospital at Marseilles.

The patient, a child passenger, was removed to Hospital, and the vessel and bedding disinfected.

The Assistant Surgeon, suffering from German measles, was landed at Queenstown on the homeward passage.

Date 1918.	Name of Vessel.	Where from.	Nature of Sickness.	Hospital to which Patient was removed.
May 11	Carmania ...	New York ...	Measles ...	Grafton Street
May 12	Tunisian ...	Montreal ...	Scarlatina ...	Netherfield Road
May 12	do. ...	do. ...	Diphtheria ...	Fazakerley ...
May 12	do. ...	do. ...	Chicken-pox	Fazakerley ...
May 12	do. ...	do. ...	Measles ...	Fazakerley ...
May 13	Conway ... (Training Ship)	In the River	Scarlatina ...	Grafton Street
May 13	City of Lahore	Karachi and Bombay ...	Suspected Rat Plague	... ..
May 17	Victorian ...	Montreal ...	Measles ... (2 cases)	Fazakerley ...
May 19	Caronia ...	New York ...	Measles ...	... ..
May 19	Conway ...	in the River	Diphtheria ... (4 cases)	Mill Lane ...
May 23	Empress of Britain	Montreal ...	Measles ...	Fazakerley ...

REMARKS.

The patient was removed to Hospital. Vessel disinfected.

The patient was removed to Hospital and the vessel and bedding disinfected.

A passenger, suffering from Diphtheria, was removed to the City Hospital, Fazakerley, and the vessel and bedding disinfected.

Removed to Hospital and the vessel and bedding disinfected.

Removed to Hospital and the vessel and bedding disinfected.

One of the boys, suffering from Scarlatina, was brought ashore and taken to the City Hospital. Disinfection carried out by the ship's officers.

This vessel left Bombay on April 13th with a cargo of grain. On arrival at Marseilles she was fumigated by the "Clayton" Apparatus, one dead rat being found subsequently. No sickness occurred during the voyage and on arrival here on May 13th all were found well on board. On the 17th of May information was received from the Bacteriologist that one of the rats trapped on board presented signs suspicious of Plague. The vessel was at once fumigated throughout, the holds being then empty, 15 cwts. of sulphur being used. The vessel was allowed to proceed to the Birkenhead graving docks on the following day. The 29 rats killed by the fumigation were examined, but none of them showed evidence of Plague.

Removed to Hospital. Vessel disinfected.

The patient, convalescent on arrival, proceeded to his home.

Four of the boys, suffering from Diphtheria, were brought ashore and removed to the City Hospital.

The patient, a child saloon passenger, was removed to the City Hospital, Fazakerley.

Date 1913,	Name of Vessel.	Where from.	Nature of Sickness.	Hospital to which Patient was removed.
May 24	Baltic ...	New York ...	Scarlatina ...	Fazakerley
May 26	Devonian ..	Boston ...	Chicken-pox	... ..
May 26	Darro ...	Buenos Ayres	Enteric Fever	Netherfield Road
May 27	Scindia ...	Bombay ...	Enteric Fever	... ..
May 28	Highland Laird	La Plata ...	Enteric Fever (5 cases)	Netherfield Road
May 28	City of Lahore	Bombay ...	Suspected Plague	New Ferry ...
May 29	Cymric ...	Boston ...	Scarlatina ... (2 cases)	Netherfield Road
May 29	Conway ... (School Ship)	In the River	Diphtheria ...	Mill Lane ...
May 29	Prahsu ...	West Coast of Africa	Enteric Fever	... ..
June 4	Megantic ...	Montreal ...	Scarlatina ...	Grafton Street

REMARKS.

The patient, who had gone to his home in the City, was removed to Hospital and the vessel and bedding disinfected.

Patient proceeded with the parents to their home in Manchester. Disinfection of the vessel carried out.

One of the crew, who was removed to Hospital, and the vessel and bedding disinfected.

A saloon passenger, suffering from Enteric Fever, was left in Hospital at Marseilles on the homeward passage, where disinfection was carried out.

The patients, two of the crew, were removed to Hospital, and the vessel and bedding disinfected. Three others having Enteric Fever were left in Hospital at Las Palmas on the home passage.

On the 24th May information was received that Sheik KeKeer Mahomed, a native fireman, was severely ill with symptoms of Pneumonia. He was removed to the Port Hospital in the Birkenhead ambulance on the same day, and was found to have Pneumonia. The crews' quarters were disinfected. On May 28th, information was received that the firemen's cook had died suddenly. Three other firemen were removed in the Birkenhead Fever Ambulance with symptoms of Pneumonia. The body of the firemen's cook was removed to the Seacombe Mortuary on the 29th, where a Post-mortem was made by Professor Beattie; this showed that the cause of death was Pneumonia, caused by the Pneumococcus, and not the Bacillus pestis. No further cases of Pneumonia occurred, and the vessel sailed for India on the 31st of May.

The patients were removed to Hospital and the vessel and bedding disinfected.

One of the Boys suffering from Diphtheria, was brought ashore and removed to the City Hospital.

The patient, a distressed British seaman, being convalescent, was allowed to proceed to his home. Disinfection of the vessel and bedding was carried out.

The patient, one of the stewards, was removed to Hospital, and the vessel and bedding disinfected.

Date 1913.	Name of Vessel.	Where from.	Nature of Sickness.	Hospital to which Patient was removed.
June 4	Megantic ...	Montreal ...	Diphtheria ...	... ..
June 6	Castalia ...	Bombay ...	Enteric Fever	Netherfield Road
June 6	Celtic ...	New York ...	Chicken-pox	Fazakerley ...
June 6	do. ...	do. ...	Scarlatina ...	Fazakerley ...
June 9	Carmania ...	New York ...	Enteric Fever	Netherfield Road
June 9	Orcoma ...	South American Ports	Small-pox ...	New Ferry ...
June 9	do. ...	do. ...	Enteric Fever	... ..
June 13	Tunisian ...	Montreal ...	Enteric Fever	... ..
June 13	Arabic ...	Boston ...	Measles ...	Fazakerley ...

REMARKS.

A child steerage passenger died from Diphtheria on the homeward passage. Disinfection of the vessel was carried out.

Patient removed to Hospital and the vessel and bedding disinfected.

The patient, a child passenger, was removed to Hospital, and the vessel and bedding disinfected.

A deported passenger, suffering from Scarlatina, was removed to the City Hospital, Fazakerley, and the vessel and bedding disinfected.

The patient was removed to Hospital, and the vessel and bedding disinfected.

This vessel arrived on June 9th and reported one case convalescent as Enteric Fever, but otherwise all well. In course of Medical Inspection, a second-class passenger was found to be suffering from Modified Small-Pox. The case had been regarded as non-infectious by the ship's Surgeon. He had been in the Infectious Diseases Hospital at Rio-de-Janeiro, suffering from Malaria, until May 31st, and developed a rash on June 5th. He was removed to the Port Hospital in the ship's boat. The passengers and crew numbering 696 were inspected, and with the exception of two cases of minor sickness, were found all well. Their names and addresses were obtained and forwarded to the Authorities of the districts of destination. Disinfection of the vessel and bedding was carried out by the Port and City Sanitary Staff, and the vessel was allowed to proceed to dock. Three other passengers (contacts) who had gone to their homes in Leicester, Kettering, and Haselmere respectively, subsequently developed the disease.

The patient, a saloon passenger, being convalescent, was allowed to proceed to his home. Vessel and bedding disinfected.

The patient, who arrived by this vessel, developed the disease after arrival at her home in Woolwich.

The patient, one of the stewards, was removed to Hospital, and disinfection carried out.

Date 1913.	Name of Vessel	Where from.	Nature of Sickness.	Hospital to which Patient was removed.
June 13	Cedric ...	New York ...	Measles ... (4 cases)	Fazakerley ...
June 13	Lake Manitoba	Montreal ...	Measles ... (2 cases)	Fazakerley ...
June 16	Caronia ...	New York ...	Measles ...	... ..
June 16	Zermatt ...	River Plate...	Suspected Enteric Fever	Netherfield Road
June 16	Mauretania ...	New York ...	Measles ...	Fazakerley ...
June 18	Franconia ...	Boston ...	Measles ...	Fazakerley ...
June 21	Baltic ...	New York ...	Diphtheria ...	... ..
June 25	Canada ...	Montreal ...	Chicken-pox	... ..
June 26	Cymric ...	Boston ...	Measles ...	... ..
June 26	Virginian ...	Quebec ...	Scarlatina ...	Fazakerley ...
June 26	do. ...	do. ...	Diphtheria ...	Fazakerley ...
June 26	do. ...	do. ...	Erysipelas ...	Fazakerley ...
June 30	Indefatigable Training Ship	in the River	Diphtheria ...	Mill Lane ...

REMARKS.

One of these was landed at Queenstown on the homeward passage, the others on arrival in this Port being removed to the Fazakerley Hospital.

Two children, passengers, who were removed to the Fazakerley Hospital.

The patient proceeded to her home in Staffordshire.

The carpenter was removed to Hospital and the vessel and bedding disinfected.

The patient, a child passenger, was removed to Hospital.

A saloon passenger, who was removed to Hospital.

The patient, a passenger, was landed at Queenstown on the homeward passage. Disinfection of the vessel and bedding carried out on arrival at this Port.

The patient, being convalescent, was allowed to proceed.

An adult passenger, who proceeded to his home.

Removed to Hospital and the vessel and bedding disinfected.

Removed to Hospital and the vessel and bedding disinfected.

Removed to Hospital and the vessel and bedding disinfected.

The patient was brought ashore and removed to the City Hospital, Mill Lane. Disinfection of the vessel carried out by the ship's officers.

Date, 1913.	Name of Vessel.	Where from.	Nature of Sickness.	Hospital to which Patient was removed.
June 30	Adriatic ...	New York ...	Measles ... (2 cases)	Grafton Street...
July 1	Burutu ...	West Coast of Africa	Enteric Fever	Netherfield Road
July 2	City of Sparta	Indian Ports, <i>via</i> Newport	Small-pox (6 cases)	New Ferry ...
July 3	Upcerne ...	San Nicolas	Enteric Fever	New Ferry ...
July 3	Laconia ...	Boston ...	Scarlatina ...	Netherfield Road
July 4	Empress of Ireland	Quebec ...	Erysipelas ...	Fazakerley ...
July 5	Victorian ...	Montreal ...	Enteric Fever	Bootle ...
July 7	Indefatigable (Training Ship)	In the River	Scarlatina ...	Mill Lane ...
July 9	Teutonic ...	Montreal ...	German Measles	Fazakerley ...

REMARKS.

Removed to the City Hospital, and disinfection of the vessel carried out.

One of the crew, a steward, was removed to Hospital, and the vessel and bedding disinfected.

This vessel arrived at Liverpool on June 13th; all on board were inspected and found well. The vessel left Liverpool for Newport, where she arrived on the 19th June. On the 21st June, a Lascar fireman was noticed to have an eruption, and was removed to Hospital on the 22nd, the native firemen and seamen were vaccinated and the vessel disinfected. The date of the appearance of rash points to infection having been contracted at Marseilles, where Small-pox was prevalent at the time. The vessel arrived at Birkenhead again on the evening of the 2nd July, and on the 5th one case of Small-pox and five contacts, with temperatures, were discovered in the course of daily Medical Inspection, and were removed to the Port Sanitary Hospital. All the remaining crew, including native stewards, were re-vaccinated, and the usual disinfection carried out.

The five contacts who were removed, along with the patient, all developed a typical but very mild type of Small-pox.

The patient, one of the crew, a seaman, was removed in the Birkenhead Ambulance to the Port Hospital, and the vessel and bedding disinfected.

Removed to Hospital and the vessel and bedding disinfected.

Patient removed to the City Hospital at Fazakerley.

The patient, a steward, was notified from his home in Bootle. Disinfection of the vessel and bedding was carried out.

The case was notified from the Royal Southern Hospital, and was removed to the City Hospital, Mill Lane. Disinfection of the vessel was performed by the ship's officers.

Patient removed to the City Hospital at Fazakerley and disinfection carried out.

Date 1918.	Name of Vessel.	Where from.	Nature of Sickness.	Hospital to which Patient was removed.
July 10	Victorian ...	Montreal ...	Measles ...	Fazakerley ...
July 15	Laurentic ...	Quebec ...	Suspected Enteric Fever	Netherfield Road
July 21	Ortega ...	Callao ...	Enteric Fever	Netherfield Road
July 21	Conway ... (School Ship)	In the River	Scarlatina ...	Grafton Street
July 21	Demerara ...	Rio Janeiro...	Measles ...	... ..
July 24	Cymric ...	Boston ..	Measles ...	Grafton Street
July 24	Virginian ...	Montreal ...	Suspected Enteric Fever	Fazakerley ...
July 25	Conway ... (School Ship)	In the River	Scarlatina ...	Grafton Street
July 26	Megantic ...	Montreal ...	Measles ...	Grafton Street
July 31	Empress of Ireland	Quebec ...	Measles ...	Fazakerley ...
Aug. 7	Dominion .	Philadelphia	Leprosy ...	New Ferry ...
Aug. 11	Carmania ...	New York ...	Enteric Fever	Netherfield Road
Aug. 12	Delamore ...	River Plate...	Enteric Fever	... ..

REMARKS.

Patient removed to the City Hospital at Fazakerley.

A passenger having Enteric Fever was removed to Hospital, and the vessel and bedding disinfected.

The patient was removed to Hospital and the vessel and bedding disinfected.

The patient, one of the Boys, was brought ashore, and removed to the City Hospital, Grafton Street. Vessel disinfected by the ship's officers.

Two cases occurred on board during the homeward passage, but they had recovered on arrival.

The patient, a child passenger, was removed to Hospital, and the vessel disinfected.

The patient, the chief officer, was removed to Hospital, and the vessel and bedding disinfected.

The patient, a child, was brought ashore and removed to the City Hospital, Grafton Street. Vessel disinfected by ship's officers.

A child passenger, who was removed to the City Hospital.

An adult passenger, removed to Fazakerley Hospital.

A deported alien, removed to the Port Hospital.

The patient was removed to Hospital, and the vessel and bedding disinfected.

The patient, a seaman, was landed at Las Palmas on the homeward passage.

Date, 1913.	Name of Vessel.	Where from.	Nature of Sickness.	Hospital to which Patient was removed.
Aug. 19	Warwickshire	Rangoon ...	Scarlatina ...	Fazakerley ...
Aug. 20	Hildebrand ...	Manaos ...	Chicken-pox	... ..
Aug. 20	Orita ...	Callao ...	Measles ... (3 cases)	... ..
Aug. 20	Cymric ...	Boston ...	Measles ...	Grafton Street ..
Aug. 20	do. ...	do. ...	Enteric Fever	Netherfield Road
Aug. 20	Drina ...	Buenos Ayres	Erysipelas ...	... ..
Aug. 21	Laurentic ...	New York ...	Scarlatina ...	... ..
Aug. 25	Megantic ...	Montreal ...	Enteric Fever	Netherfield Road
Aug. 26	Campania ...	New York ...	Enteric Fever	Bootle
Aug. 26	Mauretania ...	New York ...	Small-pox ...	New Ferry ...

REMARKS.

The patient was removed to Hospital, and the vessel and bedding disinfected.

One of the stewards had suffered from Chicken-pox during the homeward passage, but was convalescent on arrival.

Three cases of Measles occurred during the passage home, but were recovered on arrival.

The patient, a steerage passenger, was removed to Hospital.

A passenger, suffering from Enteric Fever, was removed to Hospital and the vessel and bedding disinfected.

The patient, one of the seamen, proceeded to his home.

The patient, a saloon passenger, had gone to his home in London, the Medical Officer of Health of Westminster duly informing the Liverpool Authorities.

The patient was removed to Hospital, and the vessel and bedding disinfected.

A steward, suffering from Enteric Fever, was admitted to the Bootle Hospital. Vessel and bedding disinfected.

This vessel arrived on August 26th, and a message was received that there was a case of Chicken-pox on board. The patient, a second-class passenger, was found to be suffering from Small-pox. He was removed by ship's boat to the Port Hospital. The names and addresses of the members of the crew were obtained and forwarded to the Authorities of destination. It was impossible to obtain the addresses of the passengers, as these had already left the vessel before information was received of the presence of the case on board. A number of contacts were vaccinated on board by the ship's Surgeon. Disinfection of the vessel and bedding was carried out.

Date 1913.	Name of Vessel.	Where from.	Nature of Sickness.	Hospital to which Patient was removed.
Aug. 29	Anselm ...	Manaos ...	Enteric Fever	Brownlow Hill
Sept. 4	Haverford ...	Philadelphia	Suspected Enteric Fever	Netherfield Road
Sept. 15	Desna ...	La Plata ...	Suspected Enteric Fever	Fazakerley ...
Sept. 16	Counsellor ...	Galveston ...	Enteric Fever	Netherfield Road
Sept. 18	Victoria ...	Callao ...	Small-pox ...	New Ferry ...
Sept. 18	City of Calcutta	Karachi ...	Enteric Fever	Netherfield Road
Sept. 22	Eros ...	Smyrna ...	Suspected Enteric Fever	Netherfield Road
Sept. 23	Engineer ...	Karachi ...	Enteric Fever	... ..
Sept. 24	Empress of Ireland	Quebec ...	Diphtheria ...	Mill Lane ...
Sept. 25	Luga ...	Baltic Ports...	Enteric Fever	Netherfield Road
Sept. 29	Orcoma ...	West Coast of South America	Erysipelas ...	... ..

REMARKS

A seaman from this vessel was admitted to the Brownlow Hill Infirmary.

The patient was removed to Hospital, and the vessel and bedding disinfected.

A third-class passenger having Enteric Fever was removed to Hospital, and the vessel and bedding disinfected.

One of the crew (a trimmer), suffering from Enteric Fever, was removed to Hospital, and the vessel and bedding disinfected.

This vessel was visited on arrival by Dr. Stallybrass, and it was found that a distressed British seaman who boarded the vessel at Lisbon, convalescent from confluent Small-pox, was still in an infectious state. He had been isolated on board by the Surgeon as soon as he discovered the man's condition. The passengers and crew, numbering 331, were inspected and found well. Their names and addresses were sent to the Authorities of their destination. The patient was removed to the Port Hospital in the ship's boat, and the affected quarters disinfected.

One of the crew, the quartermaster, suffering from Enteric Fever, was removed from the Morpeth Dock, Birkenhead, to the City Hospital, Netherfield Road, Liverpool, and the vessel and bedding disinfected.

The patient was removed to Hospital, and the vessel and bedding disinfected.

The patient, the quartermaster, was left in Hospital at Port Said on the homeward passage.

A steward, suffering from Diphtheria, was removed to Hospital, and the vessel and bedding disinfected.

The third engineer, suffering from Enteric Fever, was removed to Hospital, and the vessel and bedding disinfected.

One of the crew had suffered from Erysipelas on the homeward passage, but was quite recovered on arrival in this Port.

Date 1913.	Name of Vessel.	Where from.	Nature of Sickness.	Hospital to which patient was removed.
Sept. 29	Orcoma ...	S. American Ports	Enteric Fever	... ..
Sept. 30	Waipara ...	Australia ...	Suspected Enteric Fever	Netherfield Road
Oct. 2	Campania ...	New York ...	Enteric Fever	Netherfield Road
Oct. 7	Laurentic ...	Montreal ...	Measles ...	... ..
Oct. 9	Dromore ...	Mobile ...	Enteric Fever	Netherfield Road
Oct. 9	Empress of Britain	Quebec ...	Chicken-pox	... ..
Oct. 13	Oriana ...	Callao ...	Suspected Enteric Fever	Netherfield Road
Oct. 14	Carmania ...	New York ...	Measles (2 cases)	Fazakerley ...
Oct. 16	Dominion ...	Philadelphia	Diphtheria ...	... ..
Oct. 17	Maronian ...	Smyrna ...	Small-pox . .	New Ferry ...

REMARKS.

The patient, a steward, had suffered from Enteric Fever during the voyage, but was recovered on arrival in this Port.

The patient, a seaman, was removed to Hospital and the vessel and bedding disinfected.

A steward who had gone to his home in the City, was removed to Hospital and the vessel and bedding disinfected.

A third-class passenger having Measles was landed at Montreal on the homeward passage.

A seaman, having Enteric Fever, was removed to Hospital, and the vessel and bedding disinfected.

This vessel left a case of Chicken-pox at Quebec on the homeward passage.

The patient was removed to Hospital and the vessel and bedding disinfected.

Two of the crew, having Measles, were removed to the City Hospital, Fazakerley.

The patient, a steward, who was convalescent on arrival, proceeded to his home in the City. Disinfection of the vessel was carried out.

This vessel arrived on October 17th and in the course of Medical Inspection a Consular passenger, supposed to be suffering from Syphilis, was found to have Confluent Small-pox. The patient, who had been in gaol in Smyrna, had developed the rash on October 11th, and had not been effectually isolated on board, there being no Hospital on the vessel. He was removed by ship's boat to the Port Hospital. All on board were vaccinated, and their names and addresses obtained; these were forwarded to the Authorities of destination. All clothing, soiled linen, and the crews' and passengers' quarters were disinfected. The case ended fatally owing to the patient being unvaccinated. A fireman who had returned to his home in Hull subsequently developed the disease; his address had been forwarded to the Medical Officer of Health of that port.

Date 1913.	Name of Vessel.	Where from.	Nature of Sickness.	Hospital to which patient was removed.
Oct. 17	Pythia ...	Cape Lopez	Suspected Yellow Fever	New Ferry ...
Oct. 18	Megantic ...	Montreal .	Erysipelas ...	... ..
Oct. 21	Adriatic ...	New York ...	Enteric Fever	Netherfield Road
Oct. 24	Logician ...	Galveston ...	Enteric Fever	Netherfield Road
Oct. 25	Pegu ...	Rangoon ...	Enteric Fever	Grafton Street
Oct. 25	Eagle ... (Training Ship)	In the Salt- house Dock	Chicken-pox	Fazakerley ...
Oct. 31	La Blanca ..	River Plate...	Suspected Enteric Fever	Netherfield Road
Nov. 5	Busiris ...	Alexandria ...	Enteric Fever	... ..
Nov. 6	Empress of Britain	Quebec ...	Enteric Fever	... ..
Nov. 17	Scindia ...	Bombay ...	Enteric Fever	... ..
Nov. 17	Megantic ...	Montreal ...	Suspected Enteric Fever	Netherfield Road
Nov. 17	do. ...	do. ...	Enteric Fever	Fazakerley ...
Nov. 20	Dominion ...	Philadelphia	Scarlatina ... (2 cases)	Grafton Street and Fazakerley

REMARKS.

The patient, one of the crew, was removed from the vessel in the Wallasey Dock to the Port Hospital. The sickness proved to be Malaria.

The patient, an engineer, proceeded to his home in the City.

Patient, a steward, was removed to Hospital, and the vessel and bedding disinfected.

One of the crew, having Enteric Fever, was removed to Hospital and the vessel and bedding disinfected.

The patient, a cabin passenger, was removed to Hospital and the vessel and bedding disinfected.

The child of the ship keeper was removed to Hospital and the vessel disinfected.

The patient was removed to Hospital and the vessel and bedding disinfected.

The patient, one of the crew, developed the disease after arrival at his home in the City.

A saloon passenger, who had gone to his home in Battersea, was reported by the Medical Officer of Health of that District, as having developed Enteric Fever.

The patient, a saloon passenger, was landed at Marseilles on the homeward passage, where disinfection was carried out.

A third-class passenger, having Enteric Fever, was removed to Hospital, and the vessel and bedding disinfected.

The patient was removed to Hospital, and disinfection carried out as above.

Two steerage passengers, suffering from Scarlatina, were removed to Hospital, one from the vessel to Grafton Street Hospital, and the other the following day from the Emigrant Boarding House, 4, Gt. George Square, to Fazakerley, and the vessel and bedding disinfected.

Date 1913.	Name of Vessel.	Where from.	Nature of Sickness.	Hospital to which patient was removed.
Nov. 24	Laurentic ...	Quebec ...	Enteric Fever	Royal Southern
Nov. 27	Tartary ...	Buenos Ayres	Enteric Fever	Netherfield Road
Nov. 28	Virginian ..	Montreal ...	Enteric Fever	Netherfield Road
Dec. 1	Laurentic ...	Montreal ...	Measles ... (2 cases)	... ..
Dec. 8	Yanland .	Göthenburg	Poliomyelitis	Royal Southern
Dec. 8	Lusitania ...	New York ...	Cerebro Spinal Meningitis	Fazakerley ...
Dec. 8	Demerara ...	La Plata ...	Measles ...	... ..
Dec. 9	Marthe Roux	Antofagasta	Enteric Fever	Royal Southern
Dec. 10	Empress of Ireland	Montreal ...	Enteric Fever	Mill Road Infirmary
Dec. 11	Baltic ..	New York ...	Diphtheria ...	Mill Lane ...
Dec. 15	Megantic ...	Portland ...	Measles ...	Grafton Street
Dec. 18	Haverford ...	Philadelphia	Suspected Small-pox	Fazakerley ...
Dec. 18	Esperanca ...	Elephant Bay	Enteric Fever	Netherfield Road

REMARKS.

The patient, who had gone to his home in the City, was removed to the Royal Southern Hospital, and the vessel and bedding disinfected.

The patient was removed to Hospital, and the vessel and bedding disinfected.

Patient removed to Hospital and the vessel and bedding disinfected.

The patients, being convalescent on arrival, were allowed to proceed to their home in Scotland.

The patient, a seaman, was removed to the Royal Southern Hospital, the vessel and bedding being disinfected.

A boy passenger, who was removed to the City Hospital, at Fazakerley. Disinfection carried out.

The patient was landed at Lisbon on the homeward passage.

The captain of this vessel, suffering from Enteric Fever, had been admitted to the Royal Southern Hospital on the 23rd of November, and died from that disease on the 29th.

One of the crew, having Enteric Fever, who had gone to his home in the City, was admitted to the Mill Road Infirmary.

The patient, a second-class passenger, was removed to Hospital, and the vessel and bedding disinfected.

The patient, a child passenger, was removed to the City Hospital, Grafton Street.

An Italian steerage-passenger, suffering from suspected Small-pox, was removed to Hospital, and the vessel and bedding disinfected. The sickness proved to be Chicken-pox.

One of the crew, suffering from Enteric Fever, was removed to Hospital, and the vessel and bedding disinfected.

Date 1913.	Name of Vessel.	Where from.	Nature of Sickness.	Hospital to which patient was removed.
Dec. 22	Lisbon ..	Oporto ...	Diphtheria ...	.. ...
Dec. 22	Oronsa ...	Callao ...	Suspected Small-pox .	Fazakerley ...
Dec. 24	Monrovia ...	West Coast of Africa	Yellow Fever	... ...
Dec. 26	Stuart Prince	Alexandria ...	Enteric Fever (2 cases)	.. ...
Dec. 30	Dominion ...	Portland ...	Suspected Enteric Fever	Netherfield Road

During the year 142 cases of Phthisis were reported on vessels etc., was carried out. Certain other cases of infectious disease landed

REMARKS.

The patient, a seaman, was landed at Oporto on the homeward passage.

A second-class passenger, together with two contacts, were removed to the Fazakerley Hospital for observation. The sickness proved to be Chicken-pox.

A seaman, suffering from Yellow Fever, was landed at Calabar and taken to the European Hospital; he recovered and joined the vessel at Forcados. Disinfection was performed at Lagos.

Two of the crew of this vessel, suffering from Enteric Fever, proceeded with the ship to Manchester, the Medical Officer of that Port being informed.

The patient, a steward, was removed to Hospital, and the vessel and bedding disinfected.

arriving in the Port. In all instances disinfection of the vessel, abroad are not included in this table.

Diseases incident upon Sailors.

Sailors are liable to certain diseases in especial degree. This is well shown by the following extracts from the Decennial Supplement to the Registrar's General's Report:—

“Both Bargemen and Seamen suffer loss of life at every group of ages greatly in excess of that of other occupied and retired males; this is especially noticeable in the second of these callings at age group 15-35, in which case the rate is more than double the standard.

“On examining the causes producing this excessive mortality, it will at once be seen that the principal factor is accident; the comparative mortality therefrom being for bargemen 234, and for seamen 257. If these deaths be deducted the remaining mortality, due to disease, is reduced to 1099 and 1389 for these occupations respectively.

“Seamen fall victims to alcoholism and diseases of the liver much faster than do the occupied and retired males; their mortality is also much greater from Cancer and Tuberculous Phthisis, as well as from Bright's disease and from disease of the nervous, circulatory, and respiratory systems. Their loss of life from accident exceeds even that of Bargemen, being nearly four and a half times the average for occupied and retired males generally.”

This excessive liability to disease is in part due to the stresses of the work, in part to Malaria, Venereal Diseases, and other infective conditions acquired abroad, and in part to the peculiar environment of the sailor.

The accompanying table of non-infectious disease is not confined to sickness amongst seamen, but includes that recorded amongst passengers. Nevertheless, some conclusions may be deduced from it. There would appear to be a real diminution in the amount of Malaria, probably due to the improved sanitation of certain foreign ports. Beri-Beri is also less frequent, as its causation by the too exclusive reliance on “polished” rice has become appreciated. The increase of Venereal Disease is probably apparent and not real, depending upon the efforts that are made to discover these maladies, in order to advise those suffering as to the need for treatment, and the risk of infecting others.

TABLE 8.
NON-INFECTIOUS SICKNESS.

Disease.	Average 1900 to 1905. (a)	1912. (b)	1913. (c)
Malta Fever	0.2	—	—
Malaria	191	151	141
Blackwater Fever	1	3	2
Other febrile diseases	9	10	18
Beri-Beri.....	17	15	9
Scurvy	0.3	—	—
Syphilis .....	) Not Separated.	12	13
Soft Sores		—	—
Gonorrhœa		12	8
Venereal Disease undefined.....	34.5	45	44
Cancer	2.3	7	4
Rheumatism	19	16	31
Alcoholism	2.1	3	2
Trachoma	—	4	5
Lunacy	3.2	14	24
Organic Heart Disease	21	15	16
Bronchitis	13	12	21
Pneumonia	18	37	39
Other Respiratory Diseases	5.3	45	35
Dysentery and Diarrhœa	19	52	32
Appendicitis	—	4	11
Hernia.....	4	5	5
Nephritis and Bright's Disease	4.7	12	7
Skin Diseases	3.7	11	16
Suicide	1	6	2
Accidents and Injuries.....	20	63	29
Food Poisoning	0.6	15	1
Streptococcal Sore Throat	0	50	—
Other Defined Diseases	22	51	36
Other ill defined diseases.....	62	128	78

Sanitation of Vessels.

With the object of preventing evil effects which are especially liable to follow insanitary conditions on shipboard, owing to the close aggregation of persons, the sanitary conditions on board ship are subjected to close inspection. The number of vessels presenting defect is considerable.

The defects are classified under three headings as arising from :—

- (a) Faulty construction.
- (b) Wear and tear.
- (c) Lack of cleanliness, and nuisance.

A large number of the defects, included under the third heading, that are found on British ships, arise from the crews having been paid off and the forecastles being unoccupied. This is specially applicable to the tramp class of vessel. In the case of ships of foreign nationality, or carrying “native” crews, the crew are at the time inhabiting quarters where filth or nuisance exists.

4,691 visits to vessels were made by the Inspectors during the year.

Work of the Port Sanitary Inspectors.

The area of the Port is divided into four districts, those of the North Docks, the North Central Docks, the South Docks, and the outlying districts comprising Birkenhead and Garston. These are each in charge of an Inspector who is fully qualified, both by examination and for the most part by previous sea-going experience. These visit all vessels lying within their district to examine into their sanitary state and also to enquire concerning the health of those on board, and as to the occurrence of sickness during the voyage, particularly stringent enquiries being made in the case of all vessels from ports where Plague, Cholera or Smallpox are prevalent. Enquiries are also made as to the occurrence of sickness or mortality amongst the rats on vessels from plague-infected ports.

The Inspectors report daily to the Assistant Port Medical Officer, and vessels have frequently to be visited in the docks on both sides of the Mersey, owing to reports thus received from the Inspectors.

INSPECTION OF SHIPPING.

Year ending 1913.

TABLE 9.

The following Table indicates the number of visits paid to vessels by the Inspectors during the year:—

Nationality.	Visits.	Re-visits.	Total.
British	3,001	1,133	4,134
Norwegian	117	42	159
Swedish... ..	27	3	30
Spanish... ..	116	122	238
Danish	16	2	18
German... ..	36	7	43
Italian	1	1	2
Belgian	3	—	3
Russian... ..	10	4	14
French	16	2	18
Dutch	11	1	12
Greek	4	5	9
Austrian	1	1	2
Chilian	2	3	5
American	1	—	1
Peruvian	1	—	1
Brazilian	1	1	2
	<u>3,364</u>	<u>1,327</u>	<u>4,691</u>

In addition to vessels examined by Sanitary Inspectors, 1,267 visits were made by the rat-searchers, this includes 676 visits and 591 re-visits.

SUMMARY OF INSANITARY CONDITIONS.

TABLE 10.

Class of Vessels.	Number Inspected.	Number on which nuisances were found.	Per cent.
FOREIGN—			
Steamers	2,393	781	32·63
Sailing	25	9	36·00
Total... ..	2,418	790	32·67
COASTWISE—			
Steamers	863	135	15·64
Sailing	83	30	36·14
Total... ..	946	165	17·44

Nationality.	Number Inspected.	Number on which Nuisances were found.
British	3,001	845
Foreign	363	110
	3,364	955

Nuisances arising through

Defects of Original Construction.	Per cent. of Total Defects.	Structural Defects through wear and tear.	Per cent. of Total Defects.	Dirt, and other conditions prejudicial to health.	Per cent. of Total Defects.
72	2·56	203	7·51	2,526	89·92

TABLE 11.

THE FOLLOWING TABLE SHOWS THE NUMBER AND NATIONALITIES OF THE VESSELS ON WHICH DEFECTS WERE DETECTED DURING THE YEAR 1913.

NATIONALITY.	Number of Ships.	Dirty Forecasts.	Dirty Wash-houses, Store-houses, etc.	Foul Water Casks.	Foul Bilges.	Foul W.C's.	Accumulations of offensive refuse.	Gear stored in Crew's Quarters.	Damp Quarters.	Water lodging on top of Forepeak Tank.	Animals kept, causing nuisance.	Leaky Decks overhead.	Defective Stoves.	Defective Bulkheads.	Defective Ports and Sky-lights.	Defective Ventilators.	Defective Flooring Boards.	Defective Hatches, Lockers.	Defective Chain Pipes.	Defective Hawse Pipes.	Defective W.C. Fittings.	Defective Soli Pipes.	Inadequate Ventilation.	Inadequate Lighting.	Inadequate Drainage.	Bare Iron not Sheathed.	W.C's. deficient in Ventilation and in situation bad.	Total number of Defects.	Total Remedied.
British ...	845	1655	90	11	...	439	28	1	23	5	...	34	12	6	71	3	6	19	5	5	10	1	34	6	16	10	...	2490	1900
Norwegian ...	34	58	...	...	1	29	...	...	1	...	...	8	1	...	5	...	...	...	...	1	...	...	...	...	...	...	...	104	71
Swedish ...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	2	...	...	...	...	...	...	...	...	3	3
Spanish ...	49	88	...	...	...	58	...	...	...	...	...	1	...	...	1	...	...	...	...	4	...	...	...	...	...	...	...	147	117
Danish ...	4	4	...	...	...	...	...	...	1	...	...	1	...	...	1	1	...	...	...	...	...	...	...	...	...	...	...	8	4
German ...	9	5	...	...	...	5	2	...	...	...	...	...	...	...	8	...	...	2	...	...	...	...	4	...	...	...	...	26	17
Italian ...	1	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	2
Belgian ...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Russian ...	3	4	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	4	4
French ...	3	2	..	...	...	2	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	..	...	...	...	5	5
Austrian ...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	..	...	...	...	...	1	1
Greek ...	3	6	...	...	...	3	...	...	1	...	...	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	11	11
Brazilian ...	1	1	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	...	...	...	...	...	3	1
Chilian ...	1	3	...	...	...	2	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	5	5
Total ...	955	1828	90	11	1	533	31	1	26	5	...	45	13	6	86	5	6	21	7	5	15	2	40	6	16	10	...	2809	2141

Canal Boats.

The Port Sanitary Inspectors have been appointed Canal Boat Inspectors, under the Canal Boat Acts of 1877 and 1884. This is rendered necessary by the large number of Canal Boats which are to be found lying in the Liverpool Docks. By rotation one Inspector devotes one day per week for a period of five months at a time, as it has been found that in this way it is easier to follow up any boat that may be defective. These boats are for the most part kept in very good repair.

Contraventions of the Acts, and of the regulations made under them, include failure to register the boat; failure to have the boat clearly marked with the registered number or to produce the certificate of registration on demand, failure to keep the cabins or water-casks in good order or repair; carrying offensive cargoes insufficiently separated from the cabins; overcrowding or improper habitation; and failure to notify infectious disease.

868 boats were inspected during the year, of which number 28 were found to have some condition contravening the regulations.

Special Visits.

In addition to the daily routine inspection of the sanitation of vessels, special visits require to be made to many vessels on report of sickness; smallpox contacts have also to be kept under daily observation. Disinfection has to be carried out or supervised on all vessels which have had cases of actual or suspected infectious disease. 239 vessels were disinfected during the year, in some cases extensive precautions being required. The Inspectors also supervise the fumigation of the holds of vessels for the destruction of rats, when certificates of such fumigation are required by foreign sanitary authorities.

The whole time of one Inspector has been occupied in supervising the landing of cattle from coastwise cattle boats, under the provisions of the Diseases of Animals Acts, to which duties they have been specially appointed.

TABLE 12.

RETURN OF THE NUMBERS OF CATTLE, SHEEP AND SWINE
EXPORTED FROM IRELAND TO LIVERPOOL DURING
THE YEAR 1913, SHOWING THE PORTS IN IRELAND AT
WHICH THE ANIMALS WERE SHIPPED.

	Cattle.	Sheep.	Swine.
Ballina	206	13,655	3,810
Belfast	10,456	1,608	1
Cork	54,857	29,945	10,828
Drogheda	49,651	40,864	3,463
Dublin	109,391	188,444	18,146
Dundalk	45,026	58,347	31,394
Londonderry	12,244	17,009	446
Newry	17,714	17,395	1,273
Sligo	71	6,643	12,576
Waterford	50,177	47,607	15,074
Westport	1,102	25,498	6,105
Wexford	529	1,715	604
Total	351,424	448,730	103,720

TABLE 13.

RETURN SHOWING THE TOTAL NUMBERS OF THE SEVERAL
KINDS OF CATTLE, SHEEP AND SWINE EXPORTED FROM
IRELAND TO LIVERPOOL, DURING THE YEAR 1913.

CATTLE.	No.	SHEEP.	No.
Fat	197,496	Fat	209,244
Stores (for fattening)	126,595	Stores	4,692
Milch Cows	16,707	Lambs	234,794
Springers	2,947		
Other Cattle	385	Total Sheep	448,730
Calves	7,294		
Total Cattle	<u>351,424</u>	SWINE.	
		Fat	100,680
		Stores	3,040
		Total Swine	<u>103,720</u>

The Aliens Act, 1905.

An "immigrant" ship (i.e., a ship bringing more than 20 alien steerage passengers to be landed in the United Kingdom) may not land these passengers at other than immigration ports at which Immigration Officers and Medical Inspectors have been appointed and Immigration Boards have been established.

The immigration Ports are:—Cardiff, Dover, Folkestone, Grangemouth, Grimsby, Harwich, Hull, Leith, Liverpool, London (including Queenborough), Newhaven, Southampton, and the Tyne Ports.

An alien shall be considered to be an "undesirable" according to section 1 (3) of the above Act:—

- (a) If he cannot show that (a) he has in his possession or (b) is in a position to obtain the means of decently supporting himself and his dependents (if any); or
- (b) If he is a lunatic or an idiot, or owing to any disease or infirmity appears likely to become a charge upon the rates or otherwise a detriment to the public; or
- (c) If he has been sentenced in a foreign country, with which there is an extradition treaty for crime, not being an offence of a political character, which is, as respects that country, an extradition crime within the meaning of the Extradition Act 1870; or
- (d) If an expulsion order under this Act has been made in his case, but in the case of an immigrant who proves that he is seeking admission to the country solely to avoid prosecution or punishment on religious or political grounds or for an offence of a political character, or persecution, involving danger of imprisonment or danger to life and limb on account of religious belief, leave to land shall not be refused on the ground merely of want of means, or the probability of his becoming a charge on the rates

Under the Aliens Act, 2nd class passengers are exempted from inspection, subject to the conditions expressed in the bond into which the shipping company granted exemption is required to enter, viz:—

That no undesirable immigrant will be landed amongst the exempted passengers. H.M. Inspector of Aliens, however, has emphasised the

importance of a close supervision by immigration officers of the above mentioned class.

In the United Kingdom during 1913, leave to land was finally withheld to 1,320 persons; 1,071 on the ground of want of means, and 248 on medical grounds; 89 of these latter were cases of trachoma.

H.M. Inspector of Aliens in his annual report for 1913 has drawn attention to the traffic in Aliens suffering from disease, and the following is a quotation from his report which is of interest.

“In previous reports I have had occasion to refer to the highly organised and undesirable traffic which is carried on by certain agents in this country in Aliens, chiefly Armenians and Syrians suffering from Trachoma, the inducement held out being that they will be cured of the disease and shipped without trouble to America, and I have pointed out that as these Aliens mainly arrive as cabin passengers it is impossible, in the existing state of the law, to deal with them by inspection at the ports, The lodging houses to which they are consigned are all situated in Liverpool, and I am glad to say that in 1913 the Liverpool Corporation secured the insertion of the following clause in their Local Act:—

“A keeper of a common lodging-house or of a house let in lodgings who shall by any means, direct or indirect, induce any person or persons suffering from trachoma or any other contagious disease of the eye to become a lodger or lodgers in any such house shall be liable on summary conviction to a penalty not exceeding fifty pounds for a first offence, or not exceeding one hundred pounds for a second or subsequent offence. Provided that when any person so suffering is received as a lodger at any such house as aforesaid the proof that any such person was not induced to become a lodger as aforesaid shall rest with the party charged.”

“It is to be hoped that by the vigorous enforcement of their powers under this clause, the Liverpool Corporation will be able to do much towards stopping a traffic which not only constitutes a danger to the health of the community, but inflicts great hardships on its victims.”

Information regarding the above clause in the Liverpool Corporation Act 1913 has been widely distributed amongst lodging house keepers in the City, and to the public generally.

It is interesting to note that the provisions of this clause may be extended to any other infectious or communicable disease by Order of the Local Government Board.

Evidences of improvement are already forthcoming.

Two interesting tables are appended, which show the importance of Liverpool as an emigration port, also the nationalities of aliens who have been rejected or deported from foreign countries and return to this country en route for their homes. The tables are compiled from information contained in the Annual Report for 1913 of H.M. Inspector of Aliens.

TABLE 14 SHOWING THE NUMBERS OF ALIENS LANDED AND EMBARKED IN THE UNITED KINGDOM, 1913.

Ports.	Landed.	Embarked.	Total. (Landed and Embarked).
BRISTOL	2,067	2,652	4,719
CARDIFF	801	47	848
DOVER	112,421	102,983	215,404
FISHGUARD	5,728	—	5,728
FOLKESTONE	96,049	82,468	178,517
GLASGOW	13,821	16,047	29,868
GRANGEMOUTH ...	1,834	1,483	3,317
GREENOCK	1,598	—	1,598
GRIMSBY	33,657	45,514	79,171
HARWICH	65,326	55,948	121,274
HULL	73,555	24,844	98,399
LEITH	4,220	4,593	8,813
LIVERPOOL	76,293	144,765	221,058
LONDON	57,487	38,214	95,701
LONDONDERRY ...	1,791	1,748	3,539
NEWHAVEN	41,364	38,433	79,792
PLYMOUTH	11,106	2,393	13,499
QUEENSTOWN	6,001	4,078	10,079
SOUTHAMPTON ...	70,771	78,460	149,231
TYNE PORTS.....	11,939	8,237	20,176
OTHER PORTS ...	3,600	2,537	6,137
Totals	691,429	655,444	1,346,873

TABLE 15, SHOWING THE NUMBER OF ALIENS RE-ENTERING THE UNITED KINGDOM AFTER REJECTION OR DEPORTATION BY THE UNITED STATES, CANADA, AND OTHER COUNTRIES, AND SUBSEQUENTLY TRACED OUT, OR OTHERWISE, OF THE UNITED KINGDOM FOR THE YEAR 1913.

NATIONALITY.	Insane.	Traehoma.	Other Medical Grounds.	Likely to become a Public Charge	Contravention of Labour Laws.	Crime.	Illiterate.	Other causes not stated.	Returned with persons rejected.	TOTAL.
RUSSIANS	65	48	196	296	52	32	3	—	25	717
NORWEGIANS, SWEDES AND DANES	70	2	30	31	—	12	—	—	1	146
GERMANS	9	3	8	20	1	16	—	—	2	59
DUTCH	2	—	2	2	—	3	1	—	3	13
BELGIANS	—	1	7	8	—	14	—	2	—	32
FRENCH	1	1	—	—	1	1	—	2	—	6
AUSTRIANS AND HUNGARIANS	30	24	175	151	14	28	—	—	8	430
ITALIANS.....	7	5	48	33	5	17	—	2	1	118
SWISS	2	—	—	7	—	—	—	—	—	9
SPANIARDS.....	—	1	12	5	52	—	—	—	—	70
BULGARIANS, ROUMANIANS, SERVANS, MONTENEGRINS	6	—	13	92	8	2	—	—	1	122
GREEKS	2	8	18	48	23	7	—	5	—	111
OTTOMANS										
PERSIANS										
OTHER NATIONALITIES	3	—	1	—	—	—	—	—	—	4
Total	197	93	512	695	156	132	4	11	41	1841
REJECTED BY :—										
UNITED STATES	135	67	384	366	148	77	—	2	10	1189
CANADA	62	25	125	329	8	52	—	7	31	639
OTHER COUNTRIES	—	1	3	—	—	3	4	2	—	13
TRACED OUT OF THE UNITED KINGDOM	196	91	506	684	155	129	4	11	40	1816
NOT TRACED OUT OF THE UNITED KINGDOM	1	2	6	11	1	3	—	—	1	25

EMIGRATION.

There was an increase in the number of emigrants leaving the Port of Liverpool during the year 1913, the number being 347,541, an increase of 24,354 over the previous year when the number of emigrants leaving the Port was 323,187.

A special feature to be noticed is that the great majority of British emigrants, i.e., those from the United Kingdom and Ireland, go to Canada, whilst the bulk of the foreign emigrants go to the United States.

The following is a return of the number of emigrants and clearances of ships, including those passenger vessels in which medical inspection was not required, from 1900-1913.

TABLE 16.

In 1900, 149,884 Emigrants, and 660 Clearances of Ships.

„ 1901, 167,452	„	761	„
„ 1902, 214,113	„	791	„
„ 1903, 265,918	„	902	„
„ 1904, 274,584	„	924	„
„ 1905, 277,536	„	983	„
„ 1906, 352,818	„	1,090	„
„ 1907, 385,797	„	1,102	„
„ 1908, 212,155	„	1,113	„
„ 1909 253,400	„	1,117	„
„ 1910 336,088	„	1,149	„
„ 1911 312,027	„	1,153	„
„ 1912 323,187	„	1,165	„
„ 1913 347,541	„	1,199	„

The following Tables, Nos. 17 and 18, relating to Emigration have been kindly supplied by the Board of Trade.

TABLE 17.

Statement showing the Number of Passengers of British and Foreign Nationality that left the Port of Liverpool for places out of Europe in the year 1913 :—

DESTINATION.	British Subjects.	Aliens.	Total.
British North America....	113,931	22,704	136,635
Australia and New Zealand	12,636	120	12,756
British South Africa	845	22	867
India (including Ceylon)	4,572	166	4,738
Other British Colonies and Possessions	4,491	197	4,688
Total British Empire.....	136,475	23,209	159,684
United States.....	61,379	118,328	179,707
Other Foreign Countries	6,998	1,152	8,150
Total Foreign Countries...	68,377	119,480	187,857
Grand Total.....	204,852	142,689	347,541

TABLE 18.

Number of Passengers of British and Foreign Nationality, as given in Table No. 17, that sailed from the Port of Liverpool, in each month of the year 1913.

MONTH.	British Subjects.	Aliens.	Total.
January	7,554	5,459	13,013
February	12,711	7,707	20,418
March.....	24,465	11,049	35,514
April	25,757	13,545	39,302
May	29,906	15,557	45,463
June	20,396	12,838	33,234
July	16,333	13,282	29,615
August.....	18,498	17,767	36,265
September	19,017	18,007	37,024
October	17,296	12,213	29,509
November	8,305	9,422	17,727
December	4,614	5,843	10,457
Total	204,852	142,689	347,541

Emigrant Inspections.

All emigrants travelling second class or steerage on board vessels outward bound are subject to inspection by the Medical Officers of the Board of Trade, Dr. Burland and Dr. Macintyre. The crews of all such vessels bound for America are also subjected to inspection by these Officers. An Inspector of the Port Sanitary Authority attends these clearances in order to supervise the removal of all persons who may be rejected on account of actual or suspected infectious disease.

There were 342 such inspections, and 38 persons were rejected on account of infectious disease, most of whom were removed to the various City Hospitals.

TABLE 19.

Date, 1913	Name of Vessel.	Nature of Sickness.	Where taken to.	Description of Patient.
Jan. 16	Dominion ...	Measles ...	City Hospital, Fazakerley.	Children (2)
„ 31	Corsican ...	Chicken-pox ? ...	City Hospital, Fazakerley.	Child
Feb. 4	Pakeha ...	Scarlet Fever ...	City Hospital, Netherfield Road	Children (2)
„ 15	Teutonic ...	Measles ? ...	Boarding House 11, Great George Square	Child
March 19	Haverford ...	Chicken-pox ... Convalescent.	Boarding house Duke Street	Child
„ 20	Irishman ...	Chicken-pox	Bishop Road, Anfield ...	Child
„ 22	Dominion ...	Chicken-pox ...	City Hospital, Fazakerley.	Children (2)
April 23	Haverford ...	Chicken-pox ...	City Hospital, Fazakerley.	Child
May 1	Baltic ...	Itch	Boarding House	Child
„ 10	Somerset ...	Phthisis ...	Ardwick, Manchester ...	Adult
„ 10	Mauretania ...	Tonsillitis ...	City Hospital, Fazakerley.	Adult
„ 13	Megantic ...	Measles ...	City Hospital, Fazakerley.	1 Child & 1 Infant
„ 13	Megantic ...	Chicken-pox ...	Wallasey	Child
July 29	Cymric ...	Measles ...	City Hospital, Grafton Street	Child
„ 2	Carthaginian	Chicken-pox ...	City Hospital, Fazakerley	Child
„ 12	Arabic ...	Observation (Feverish)	Boarding House	Infant

TABLE 19.—*Continued.*

Date, 1913.	Name of Vessel.	Nature of Sickness.	Where taken to.	Description of Patient
Aug. 22	Empress of Britain ...	Chicken-pox ...	Boarding House ... 39, Paradise Street	Child
Sep. 2	Laconia ...	Feverish ...	City Hospital, Fazakerley.	1 Child & 1 Infant
„ 9	Arabic ...	Itch ...	Boarding House ...	Infant
„ 10	Victorian ...	Chicken-pox ...	Kimmel St., Liverpool ...	Child
„ 16	Franconia ...	Measles ...	City Hospital Grafton Street ...	Child
„ 16	Franconia ...	Chicken-pox ...	City Hospital, Fazakerley.	Child
Oct. 3	Empress of Britain ...	Chicken-pox ...	City Hospital, Fazakerley.	Child
„ 7	Arabic ...	Chicken-pox ...	City Hospital, Fazakerley.	Child
„ 8	Victorian ...	Seabies ... (Chicken-pox) ?	Allan Line Boarding House	1 Child & 1 Infant
„ 17	Empress of Britain ...	Seabies ...	C.P.R. Boarding House ...	3 Children
Dec. 13	Empress of Britain ...	Chicken-pox ...	City Hospital, Fazakerley.	Child
„ 20	Canada ...	Rash ...	Boarding House ...	Child

Hospital Accommodation on Board Ship.

During the year the question of hospital accommodation on board ship was considered by a Sub-Committee of the British Medical Association, who were of the opinion that suitable provision should be made on board all ocean-going cargo vessels for the separate and reserved accommodation of sick persons; this recommendation was forwarded to the Board of Trade who, in turn, issued a circular to ship-owners embodying the resolution. The Sub-Committee further urged that the recommendation should be made compulsory on all ship-owners.

This step has long been desirable in the interests of Public Health, as well as for the benefit of the seafaring population, and might well be enforced in the case of all new ocean-going vessels.

By section 203 of the Merchant Shipping Act 1894, all foreign-going vessels having one hundred persons or upwards is required to carry a duly qualified medical practitioner, and by section 303 all emigrant vessels having fifty or more steerage passengers are also required to carry a surgeon.

Under section 17 of the Merchant Shipping Act, Regulations have been issued by the Board of Trade requiring the provision of hospitals on board emigrant ships. These Regulations provide that sufficient hospital provision shall be made exclusively for the use of emigrants, and that at least one hospital shall be provided for infectious diseases in as isolated a situation as possible. The requirements are 18 superficial feet for every 50 steerage passengers, the minimum provision being 100 superficial feet, and in vessels carrying not more than 200 passengers two hospitals are considered sufficient. The hospitals are to be provided with utensils, etc., to the satisfaction of the Emigrant Officer at the Port of clearance.

These provisions of the Merchant Shipping Act are enforced by H.M. Board of Trade. The accommodation is usually of the most excellent character, the infectious diseases hospitals being roomy and well isolated.

The accommodation provided on non-emigrant passenger and cargo vessels, or purely cargo vessels need not vie with that demanded in the class of vessel engaged in the emigrant trade. Any hospital should, however contain at least two berths, and have separate sanitary convenience attached. The provision of means of warming it is essential, and if rendered mosquito-proof, it would be a protection against Yellow Fever and Malaria. It should be placed in the most isolated position possible on the vessel, which, as a rule, would be on the poop, or on the after deck, although special circumstances may render it necessary that it should be placed elsewhere.

Such a provision would be welcomed by the Masters of vessels. It would facilitate the maintenance of discipline on board ship, as the detection of malingerers would be rendered easier. Of special importance, however, would be the prevention of infectious disease.

Under the heading Smallpox and Enteric Fever, instances are given of the grave danger of leaving cases of febrile illness in the confined quarters of a ship's forecabin. Instances have also been given in previous reports where infection has been spread by these means; indeed, a well-intentioned desire to remove a sick member of the crew to more comfortable quarters amidships has resulted in exposing officers and passengers, as well as those before the mast, to the infection of Yellow Fever, Smallpox, etc. This happened in the case of Confluent Smallpox on the s.s. "Maronian," referred to on page 50. In another case

some years ago a saloon passenger with Confluent Smallpox was removed into the second cabin, thus doubling the number of those exposed to infection. A minimal provision of hospital accommodation in which all cases of febrile illness could be placed would have obviated these risks.

A photograph of the hospital situated in the poop of the ocean-going vessel, "British Monarch," appears in the appendix, and illustrates the character of the accommodation that is desirable on vessels of this class; it should be understood that on smaller vessels a less extensive provision would suffice.

Supervision of Food Importations.

A careful supervision of the conditions, as regards soundness, of imported foods entering this Country has engaged the attention of Port Sanitary Authorities for many years. Since the issue by the Local Government Board of the Foreign Meat, and the Unsound Food Regulations, the character of these consignments of food, but chiefly meats, has greatly improved, both as regards packing and soundness.

These orders deal in the first place with certain classes of meat which it is considered undesirable to admit into this Country, owing to some objectionable character, e.g., meat as scraps, trimmings, or portions too small to be reasonably identified, portions which might have come from diseased or unhealthy animals; or where, in the case of pickled meats, certain prohibitive preservatives have been added to the pickle. The Regulations also prohibit the entry of pork products which are not "officially" certified as from pigs free from disease at the time of slaughter; pigs from which the heads have been removed are also prohibited from entry.

Secondly, the Regulations provide for the general examination by the food inspectors of all other classes of foods, such as quarters of beef, carcasses of mutton, canned meats and fruits, fresh fruit, grain, etc. Provision is also made for the disposal of any meats or foods found diseased or unsound.

The work of food inspection at this port has been carried out during the year by the staff of inspectors, acting under the instructions of the Port Sanitary Committee, with considerable tact and energy, and many of the consignments dealt with have been of considerable magnitude.

The work of inspection of consignments of foods is carried on not only in the Liverpool docks, but also in Birkenhead and Bootle, also at Garston, where new docks have been opened by the London and North Western Railway Company, and here a large trade in Bananas and other fruit has already been established.

The docks on both sides of the Mersey are within the jurisdiction of the Port Sanitary Authority—see appended maps.

As in previous years, the Officers of H.M. Customs have heartily co-operated with the food staff in all matters appertaining to the inspection of food. The Customs Officers keep the Sanitary Authority informed as to the character of any foods landed from vessels which they have inspected, and which they have reason to believe are unsound.

The food inspectors carry out their work by a process of sampling of the goods after they have been landed on the dock quays, and for this purpose they can, under the regulations, require packages to be opened and their contents exposed for their inspection. If a certain degree of unsoundness is found, examination of further portions may be required.

The requirements of the frozen and chilled meat trade make it essential, where further examination is necessary, that the goods shall be removed to cold stores in the neighbourhood, where the consignments are detained for closer inspection.

It is not uncommon in cases of fresh fruit, fish and canned goods, etc., where only a slight degree of unsoundness is found, to allow the goods to be removed to market stores to be further sorted under supervision. The Port and City of Liverpool are fortunate in having staffs of reliable food inspectors, who, working in unison, are able to mutually assist one another, thereby enormously facilitating the import food trade, and avoiding all unnecessary delay and friction.

The amount of foods condemned as unfit for food during the year has been very large, as will be seen from the accompanying tables.

Meat Importations.—The importation of frozen and chilled meats still continues to increase. During the past twenty years the population of the United Kingdom has greatly increased, (19 per cent.), and the production of home-grown beef is in a practically stationary condition, hence the demand for imported supplies has become greater every year. The year under review has been an important one in regard to traffic in meats. The most important item has been the transfer of a large amount of frozen and chilled meats from Australia and South America to North America.

Some years ago the United States was the largest supplier of meat (in beef and live stock) to Great Britain, and the imports equalled 231,590 tons; last year only about 800 quarters of beef and 10,000 head of cattle arrived, representing 3,316 tons.

The population of the United States has increased enormously, and there has been a decrease in the production of cattle, consequently the United States requires all this meat, and more, for its own consumption. The States has now become a free importer of Australian and South American meats; it receives shipment in both eastern and western ports, and no less than 6,621 tons of this have been re-exported from England, mostly through Liverpool.

Another factor to be considered in connection with this general increasing demand for food is the growth of this trade as regards Continental countries; many of these through agrarian interests still place many obstacles, such as, high customs charges, or special methods of importation, on the introduction of these products across their frontiers. Others, like Italy and Switzerland, are gradually appreciating the value of such imports, so that as time goes on we shall, no doubt,

see many of the large Continental countries drawing on our sources of supply, and of necessity other areas must be opened up. The total imports of †chilled and *frozen beef, mutton and lamb into the United Kingdom during the past three years is as follows:—

628,233 tons in 1911; 642,537 tons in 1912, and 720,661 tons in 1913, reaching a value in 1913 of £26,662,896.

The importation of mutton and lamb for 1913 totalled 12,936,165 carcasses, or 7.7 per cent. in excess of the figure for 1912.

The amounts of frozen beef imported in 1913 have dropped to an extent of 3 per cent. on the importations for 1912, but chilled meats have since then supplied the deficiency.

Practically the entire supply to the United Kingdom of chilled meats, amounting to 260,801 tons, has been drawn from the Argentine. The presence of foot and mouth disease in various parts of the Argentine has interfered a good deal with the import of meats to Great Britain.

The opening up of the United States for the importation of meat and cattle will seriously interfere with Canadian meat traffic to this Country. In 1913, only 328 tons were received, as compared with 583 tons in 1912.

Table 20 shows the ports in the United Kingdom at which importations of frozen and chilled meats from Australia, New Zealand and South America have been discharged during 1913.

The importance of the Port of Liverpool as an importing and distributing centre may be emphasised by the fact that if we take the three chief railway companies which carry frozen and chilled meat, and distribute it to various parts of the country, we find that 93 per cent. of this imported meat is distributed by rail to other parts of the Kingdom.

† “Chilled” beef is carried at a temperature of 29°—30° F., and arriving here soft and ready for immediate consumption.

* The term “frozen” beef is applied to beef carried at a low temperature of 10°—15° F., arriving here perfectly hard and requiring to be thawed out before it can be used (mutton and lamb are always carried frozen.)

TABLE SHEWING THE PORTS IN THE UNITED KINGDOM AT WHICH THE IMPORTATIONS FROM AUSTRALIA, NEW ZEALAND AND SOUTH AMERICA WERE DISCHARGED DURING 1913.

PORT OF DISCHARGE.	AUSTRALIA.			NEW ZEALAND.			SOUTH AMERICA.		
	Mutton Carcases.	Lamb Carcases.	Beef Quarters.	Mutton Carcases.	Lamb Carcases.	Beef Quarters.	Mutton Carcases.	Lamb Carcases.	Beef. Frozen Quarters. Chilled Quarters.
London ...	1,352,851	1,028,506	398,002	2,140,891	2,951,163	92,116	596,338	269,365	286,027 1,219,960
Liverpool ...	1,511,672	405,262	601,203	69,574	345,144	20,690	1,208,115	349,201	878,000 1,319,531
Southampton ...	—	—	—	—	—	—	108,546	37,594	49,892 446,413
Cardiff ...	—	—	—	—	—	—	61,927	6,750	33,879 —
Bristol ...	42,047	14,692	48,499	22,699	90,684	2,418	—	—	— —
Hull ...	11,461	1,000	4,845	—	—	—	71,639	7,555	84,958 —
Newcastle ...	9,047	—	11,630	—	—	—	87,801	3,974	61,281 —
Glasgow ...	56,679	9,306	20,653	16,541	36,928	11,526	—	—	— —
Plymouth ...	—	—	—	—	—	—	2,342	1,540	3,779 1,206
Cork ...	—	—	—	—	—	—	7,890	47	7,526 —
Totals ...	2,983,751	1,458,766	1,084,832	2,249,705	3,423,919	126,750	2,143,998	676,026	1,405,342 2,987,110

* This table is taken from the Review of the Foreign Meat Trade for the year 1913, published by Messrs. Weddel & Co., Ltd.

TABLE 21.

SHOWING THE IMPORTS OF MEATS (EXCEPT
POULTRY AND GAME) INTO THE PORT OF LIVERPOOL
DURING THE YEARS 1910, 1911 and 1912.

Description.	Years.		
	1910.	1911.	1912.
	£	£	£
Bacon	4,102,268	4,517,870	3,966,241
Beef, fresh and refrigerated ...	4,509,781	4,030,387	5,280,279
Beef, salted	91,296	86,051	56,668
Hams	1,632,223	1,850,289	1,713,643
Mutton, fresh and refrigerated...	2,617,420	2,800,434	2,648,946
Pork, fresh and refrigerated ...	102,846	46,190	28,776
Pork, salted	61,603	57,634	55,421
Rabbits	298,753	241,404	223,780
Unenumerated fresh, refrigerated and salted... ..	476,440	526,293	656,165
Preserved, otherwise than by salting	514,447	847,261	770,820
Totals	£14,387,077	£15,003,813	£15,400,739

Meat Carcases.—The examination of importations of quarters of beef, mutton and lamb has been carried out carefully, and, on the whole, no fault has been found with the character of the consignments, the meats have been good and most suitable for human consumption. They are generally imported in a clean condition, and are evidently well cared for in transport, this more especially in regard to chilled meats. Some improvement is still required in the handling and transport of meats at the ship side on discharge, so as to keep in a clean condition and protect from all dust, straw manure and other conditions of an objectionable nature. Several firms have already been approached on this subject by the Medical Officer.

One notable feature in the year's review is the absence of the large amount of damaged cargoes of meat; these were prominent in previous years, and were chiefly due to break down in machinery, defective insulation, etc. During 1913 only 161 tons were dealt with, due to these causes, whilst in 1912 there were about 1,000 tons.

* Figures for the year 1913 not available at the time of going to press.



Cast-iron pot and galvanised tray for sulphur fumigation.



Boxed and Other Meats.—The importations of meats in the form of cut-up portions, or of organs, e.g., livers, hearts, kidneys, etc., packed in boxes or bags, has been very large during the year. A gradual improvement in the freezing and packing of these goods, with a few exceptions, has been noticed, this has greatly facilitated the work of inspection. It is desirable to have the meats and organs frozen separately and packed so that each piece can be removed for close examination by the food inspectors.

The subject of the packing of meats in general, so as to facilitate inspection, has received consideration during the year, as it was found that something was still required to bring the requirements of the Authority before food inspectors abroad, and before importers generally.

Accordingly a memorandum (see appendix) on the freezing and packing of meats was issued in July, which has been widely circulated; it deals with the matter in a general way, and will be found to tabulate all the points very clearly.

South American and Australian meats now come in a much improved form.

With certain exceptions, to be mentioned subsequently, the condition of meats and offal from United States, Australia and South America as regards disease has improved.

In former years we have frequently had a large amount of diseased kidneys, livers, etc.; these, chiefly from the United States, were affected with cysts of various kinds, and for some time the livers have shown evidences of these cysts having been removed. Representations have again been made to the Officers of the United States Bureau of Animal Industry, stationed in this country, regarding the importation of these livers.

During 1912, several consignments of cows udders from the United States were landed and detained, owing to the fact that they were branded "inedible"; they were closely examined, and many were found to be affected with actinomycosis and abscesses.

During the past year consignments of udders similarly marked came from Canada; the facts were reported to the Local Government Board, and enquiries were made. It was ascertained that the use of udders as

a food product in the United States and Canada is not allowed, and these goods are required to be branded as "inedible, unfit for food." In various districts of the North of England, chiefly mining districts, these glands are utilised as food products and, owing to this demand, it was finally decided by the Canadian Government that if the udders were to be shipped to this Country they would have to be specially branded. These goods now arrive labelled, "Udders for export, Canada approved."

During the year it was noticed that several consignments of pig products from Canada were not accompanied by the "Official" Maple leaf certificate as required by the Foreign Meat Regulations. The matter was reported to the Local Government Board, and the Medical Officer of Health also wrote to the Director-General at Ottawa for some information as to the nature of the inspection and the character of the Government Certificate which is given at the particular slaughter house. His reply was that inspection in Canada was carried out under the Meat and Canned Foods Act, as amended May 4th, 1910, that all establishments engaged in export trade, whether foreign or inter-provincial, were under the supervision of his Department. He reported that the system of inspection was most rigid and carefully carried out. Carcasses or portions which pass such examinations are marked "Canada approved." Products so marked are permitted to be shipped and "may enter practically any country in the world, except Great Britain, which, by her interpretation of the Regulations issued by Local Government Board, requires on certain products a special marking" (maple leaf certificate). It would seem from his reply that the special careful examination required under the Foreign Meat Regulations tends to discourage packers in Canada from forwarding to Great Britain any quantity of these products.

Frozen organs in boxes come in good condition, but the condition of bagged meats is only fair, a good deal of it is still in a condition which shows careless and rough dressing at the slaughter house, and rough handling during transit.

The difficulty, owing to the presence of nodules in Australian meats, has been to a great extent overcome by the issue under the Commerce Act of the Australian meat inspection regulations. By these it is required that all the affected parts, chiefly the brisket, shall be removed from the forequarter, and the exportation of these "crops" has, to a

great degree, done away with the necessity of detailed examination on arrival in this country. It has been found, however, that many exporting firms do not interpret this "cropping" as strictly as desirable, and, as laid down by the Australian regulations, it has therefore been necessary in some instances to insist on this operation being repeated in cold store on arrival here, to remove some areas likely to be affected.

To avoid further interference with this trade, it is to be hoped that exporters in Australia will see that the Australian regulations are strictly adhered to, and also that the other areas affected, viz., the stifle joint, are thoroughly cut and searched for nodules when the carcass is warm.

In the earlier half of the year our food inspectors came across lesions in the glands in frozen tongues from South America which, on superficial examination appeared to be tubercular. Other forms of the affection soon appeared, and the disease, which resembled Actinomycosis, was found not only in the glands but also in the blades of the tongues. This was verified by microscopical examination by the Authority's Bacteriologist.

The question of the importation of these tongues at other ports was considered important, and the Local Government Board was notified early in July. Following on this, other Authorities were warned by the Board that diseased conditions had been found in frozen tongues from this source.

The work of the examination has continued to the present time and, although some improvement has taken place in regard to some importing firms, it cannot yet be said that the numbers of diseased tongues have shown much reduction. The matter was considered so important by the Port Sanitary Authority that a special report was prepared for publication, a copy of this report will be found appended.

The food inspectors engaged in this work of examination have had an arduous experience; the tongues have had to be slightly defrosted before they can be cut, and it has not been possible for one inspector to examine the tongues carefully and get through more than 50 cases per day (equal to about 500 tongues); this has necessitated considerable delay in the delivery of consignments. It has been our practice when the percentage has shown a considerable reduction to release the consignments; this, however, very seldom occurs.

Our inspectors, during their examination of North American frozen tongues, have also found this disease on a few occasions, especially in the blade of the tongue. The glands attached to these North American tongues have been removed in trimming, and no evidences of glandular disease were forthcoming. It is very desirable that all lymphatic glands should be left attached to imported meats; this point has been repeatedly emphasised by the Local Government Board in their memorandum, and by this Authority in several previous reports.

Fish.—Large quantities of frozen fish, chiefly salmon, are imported from United States, Canada, and other parts. Several consignments of unsound fish, mostly pickled, were landed in this port during the year.

The following are examples of the class of goods dealt with:—

220 barrels pickled salmon, s.s. "Barbarian," Port Arthur, wg., 44,000lbs.; 5 barrels pickled shad, s.s. "Dominion," Montreal, wg., 1,120 lbs.; 4 barrels pickled mackerel, s.s. "Welshman," Portland, wg., 800 lbs.; 25 barrels dried codfish, s.s. "Ebani," W. C. Africa, wg., 1,250 lbs.; quantity of dried codfish, s.s. "Tunisian," Montreal, wg., 2 tons 5 cwt.; and 22,832 tins of salmon from various vessels, wg., 22,852 lbs.

Fruit.—The importation of fruit, fresh and preserved, is very large. In the Garston district of Liverpool, Messrs. Elders and Fyffes have inaugurated a new service of steamers, arriving weekly, carrying large quantities of green bananas from Jamaica, and other fruit and vegetables. Cold air is utilised in this preservation. The bunches of green bananas are carried in holds chilled by air currents which have passed over brine coils. The temperature is usually 12 to 13 degrees C. and, after landing, the fruit is ripened by hanging in maturing rooms heated by dry heat obtained by the use of bunsen burners or electric radiators; the fruit matures in about a week.

Other fruits are landed and, after examination, removed direct to market.

Jaffa oranges are all sorted on the quays, whilst other fruits are only required if showing a high percentage of unsoundness. The classification of oranges, apples, etc., appended is utilised by the food inspectors to guide them as to the character and soundness of consignments. Those which show a high percentage of unsoundness are detained on the quays for further sorting before release.

601 bags of Brazil nuts, ex s.s. "Haverford," weighing 55 tons 19 cwt., water damaged, were permitted, after drying, to be shipped to Philadelphia on the undertaking being received that these nuts would not return to this country, and that the nuts would be dealt with by the Authorities at Philadelphia. The Medical Officer communicated with the Health Authorities of that city.

The Fruit Brokers' Association have assisted the Authority as in previous years by supplying copies of their fruit sale catalogues. The work of the supervision of fruit importations has become so extensive that it was considered advisable to appoint a fruit inspector, whose duties would be mainly to supervise these cargoes. This was carried out in December, when an inspector was transferred from the City staff.

The quantity of fruit and vegetables surrendered and dealt with as unfit for food during the year has been large.

During 1911, the amount was 566 tons; in 1912, 625 tons; in 1913, 1,201 tons.

Large quantities are also surrendered to the City inspectors when the goods are finally sorted in Market Stores.

The examination of canned goods and other articles by the Analyst has yielded interesting results. In those cases where the analysis showed an excessive or unusual amount of dangerous ingredient, the importers were at once communicated with, and where necessary the goods were dealt with according to law.

The Officers of Customs drew our attention to the peculiar odour of certain consignments of canned pears, which had been opened for inspection. Samples were obtained, and the consignments detained in store pending further enquiry. The Analyst stated in his report that the odour was peculiar and due to Valeric Acid, probably arising from a decomposition of some of the natural flavouring matter of the fruit. There was no paraffin, petroleum, or other injurious or unusual substance present. The amount of tin present in this case was much greater than is usually found in tinned pears, and suggested that the fruit had either been sterilised for a longer period than usual, or that it had been re-canned.

The presence of preservatives in lime juice was made the subject of enquiry by the Local Government Board, at whose request samples were obtained from analysis on arrival.

From time to time analyses have been made of food products likely to contain excessive amounts of copper salts; these are chiefly preserved green vegetables, such as French beans, peas, etc.

During the year a certain consignment of preserved peas was tested, and only two samples found to contain '61 and '66 gr. of copper respectively, equivalent to 2·4 and 2·6 grains of crystallised copper sulphate, per pound of peas. This quantity of copper is unusual, and quite unnecessary. The two importers were at once communicated with, and they in turn gave us an assurance that the matter would be strongly brought before the packers to prevent such a thing occurring again.

During the year a certain consignment of frozen livers arrived, and each liver was coated with a layer of waxy material of pink colour. On analysis, it was found to consist of paraffin wax slightly coloured red, probably derived from the pigments and blood of the liver. The object of this coating was probably to protect these organs from atmospheric conditions.

A consignment of 969 cases of canned beef imported to this country via Marseilles was analysed, and found to contain a quantity of lead, which, in some samples, reached $\frac{1}{4}$ gr. per pound, and was considered to render the beef unfit for food.

A consignment of pigs' heads, ex s.s. "Vadso," from Copenhagen, was seen to have a peculiar greenish brown-coloured pickle, which had stained the outside of the heads a greenish colour. On analysis, the pickle was found to be free from preservatives, but contained a large amount of potass, nitrate, and, according to the Analyst, the greenish brown colour of the pickle would probably be produced by the action of this salt on the flesh,

The analysis of shell-fish, chiefly mussels, was continued. The consignments were found in many cases to show evidence in various degrees of contamination.

The question of infection of Enteric Fever being conveyed by the consumption of shellfish has been regularly brought before the trade with the object of inducing them to obtain their shellfish from sources less open to contamination by sewage.

Inedible Fats still continue to interest the Officers of the Authority, and much valuable information as to the destination and utilisation of these products has been obtained, and has been communicated to the Local Government Board.

The use of these products in establishments where pure lard and similar products are manufactured for human food has engaged the attention of the Health Department of the City of Liverpool for some time; it is of interest to note that a clause has been obtained in the recent Corporation Act of 1913 dealing with this matter. The clause reads as follows:—

Any person taking or introducing, or causing to be taken or introduced, any fats which are unfit for the food of man into any premises in which any food for man into the composition of which fat enters is manufactured or prepared for sale or into any premises directly or indirectly connected by a passage pipe or in any other way with any such premises (except so far as such passage pipe or other connection, as the case may be, are required or used for sanitary or other similar purposes and not in connection with the manufacture or preparation hereinbefore mentioned) shall for each offence be liable to a penalty not exceeding five pounds unless he can prove that such fats were not taken or introduced into such premises for the purpose of being used and have not been used as an ingredient in the manufacture or preparation of any food for man.

Certificates and Notices.—During the year there were 2,093 certificates of release granted to Customs Officers and importers of meat consignments in respect of foods detained for examination on the quays or in cold stores.

Notices under the Foreign Meat Regulations were issued in 10 cases in regard to food products of an undesirable nature or where they did not comply with the Regulations.

Meat and offal condemned is not absolutely destroyed, the great bulk is allowed to be removed under suitable guarantees to be dealt with for industrial purposes, such as soap making, tallow rendering, manure manufacture, etc.

The Medical Officer, through his inspectors, satisfies himself that the unsound foods have been satisfactorily disposed of.

578 Certificates of destruction or industrial utilisation have been issued during the year.

It will be seen that the total amount of food stuffs condemned (see table), is less than the previous year; this is largely to be explained by the greater care exercised in meat transport, and the resulting absence of damaged cargoes. The amount of fruit condemned, however, has shown a distinct advance.

The tables 22, 23, 24, 25 and 26 set forth in detail the amount of meat, offal and other foods which have been dealt with during the year. Table 19 is a useful one, showing the comparative value of the more important food stuffs imported at the principal British ports during the year 1912.

TABLE SHEWING THE QUANTITY OF MEATS CONDEMNED
DURING THE YEARS 1909, 1910, 1911, 1912 and 1913.

TABLE 22.

Year.	Beef.				Mutton.				Pork.			
	Tons.	cwts.	qrs.	lbs.	Tons.	cwts.	qrs.	lbs.	Tons.	cwts.	qrs.	lbs.
1909.....	60	11	0	14	27	17	0	9	1	12	0	15
1910.....	381	11	0	5	15	3	1	26	54	3	3	27
1911.....	659	10	2	24	18	7	0	13	65	4	2	20
1912.....	684	8	3	0	475	12	1	2	9	12	3	18
1913.....	88	0	3	12	76	16	0	13	1	4	2	15

TABLE SHEWING THE QUANTITY OF OFFAL CONDEMNED
DURING THE YEARS 1909, 1910, 1911, 1912 and 1913.

TABLE 23.

Year.	Beef.	Mutton.	Pork.	Vcal.
1909.....	10,667 pieces.	10,758 pieces.	1,252 pieces	10 pieces.
1910.....	13,388 „	28,319 „	13,845 „	4 „
1911.....	32,816 „	56,596 „	8,629 „	1,070 „
1912.....	68,272 „	57,163 „	8,229 „	196 „
1913.....	28,055 „	66,705 „	12,946 „	64 „

TABLE SHOWING QUANTITIES OF GENERAL FOOD STUFFS
DURING THE YEARS 1909, 1910, 1911, 1912 and 1913.

TABLE 24.

Description.	No. of Tins.	Pounds Weight.	Description.	No. of Tins.	Pounds Weight.
Canned Goods—					
Apricot Pulp ...	345	3,492	Frankfort Sausage	40	30
Apples ...	511	3,066	Beef ...	16,247	96,060
Cherries ...	1,355	4,065	Mutton ...	1,588	9,528
Fruit mixed ...	8,760	17,520	Kidneys ...	16	32
Pears ...	8	20	Lobsters ...	397	369
Pine Apples ...	6	18	Salmon ...	22,854	22,854
Tomatoes ...	35,694	88,799	Sardines ...	1,155	1,085
Tripe ...	3	6	Ox Tongues ...	82	492
Thyroid Gland	4	44	Butter ...	198	198
Ox Cheeks ...	16	96	Milk ...	495	353
			Rabbits ...	829	1,279

TABLE 24--continued.

Description.	Packages	Weight.				Description.	Packages	Weight.			
		Tons.	Cw's	Qrs.	lbs.			Tons.	Cw's	Qrs.	lbs.
Fruit (Fresh)—						Fruit (Dried)—					
Apples	664	33	19	3	0	Raisins ...	11	0	1	1	7
„ loose ...	—	0	17	1	23						
Bananas	9174	245	8	3	0	Vegetables—					
„ loose	—	251	17	3	12	Potatoes	66	3	6	0	0
Grapes.....	326	7	8	0	14	Carrots ...	285	8	1	1	6
„ loose	—	0	3	2	1	Onions.....	602	29	13	0	11
Melons.....	127	6	0	0	26	„ loose	—	30	14	0	14
„ loose ...	—	22	3	2	0	Tomatoes	204	1	13	3	2
Lemons	155	6	8	1	16	„ loose	—	1	8	1	25
„ loose ...	—	8	7	2	0						
Oranges	879	52	7	1	20	Cereals—					
„ loose	—	348	19	2	0	Wheat	—	1518	17	0	20
Pears	1332	52	6	1	3	Rolled Oats ...	—	12	17	0	0
„ loose	—	0	6	1	2	Oatmeal	—	53	10	0	0
Pomegranates	50	1	9	1	20	Flour	—	0	11	3	17
Pine Apples ...	12	0	8	2	8	Beans ...	—	1	4	0	0
Plums ...	25	0	5	0	20						
„ loose	—	0	0	3	6	General—					
						Bacon and Ham	—	0	15	2	18
Brazil Nuts ...	601	55	19	2	0	Cheese	1	0	0	1	8
„ loose	—	2	10	0	0	Fish	—	24	2	1	7
Pea Nuts loose	—	29	4	3	0	Rabbits ... loose	—	1	10	3	16
Cocoa Nuts ...	3	0	3	0	0	Poultry	3079	34	6	3	22

TABLE SHOWING THE QUANTITY AND DESCRIPTION OF OFFAL CONDEMNED DURING
THE YEAR 1913.

TABLE 25.

Name of Organ.	Beef.		Mutton.		Pork.		Veal.	
	Number.	Weight, Pounds.	Number.	Weight, Pounds.	Number.	Weight, Pounds.	Number.	Weight, Pounds.
Heads	117	632	—	—	494	4,309	—	—
Chicks	1,682	4,561	—	—	—	—	—	—
Tongues	3,415	18,236	—	—	99	114	32	43
Throats	—	—	73	50	—	—	—	—
Lungs	—	—	2	5	291	1,452	—	—
Plucks	—	—	804	104	—	—	—	—
Sweetbreads	170	20	37,329	13,301	—	—	—	—
Hearts	865	4,128	1,578	1,915	3	18	31	127
Livers	3,262	39,309	—	—	—	—	—	—
Weasands	1,422	850	—	—	—	—	—	—
Stomachs	1,924	13,034	—	—	—	—	—	—
Skins	3,528	4,676	3,120	416	—	—	—	—
Mesenteries	—	—	68	204	—	—	—	—
Kidneys	2,727	2,822	23,611	3,103	8	4	1	1
Udders	7,581	24,115	—	—	1	3	—	—
Feet	—	—	120	74	12,050	9,038	—	—
Tails	1,362	2,229	—	—	—	—	—	—
Totals	28,055	114,612	66,705	19,172	12,946	14,938	64	171

The organs dealt with above were rejected for various reasons, notably, decomposition and diseased conditions, such as Cysts, Tuberculosis Inflammation, Actinomycosis, &c.

TABLE 27.

Shewing comparative Value of the more important Food Stuffs imported at the principal Ports during the year 1912.

	London. 1	Liverpool. 2	Hull. 3	Harwich. 4	Bristol. 5	Leith. 6	South- ampton. 7	Glasgow. 8	Manchester 9	Newcastle. 10
	£	£	£	£	£	£	£	£	£	£
Animals	543,753	397,137	—	—	—	—	39,245	13,464	13,152	—
Butter	8,291,774	53,164	3,362,187	1,516,595	41,200	2,606,265	1,722,423	978	—	2,330,960
Cheese	3,870,261	993,618	201,120	109,807	1,146,037	189,053	176,498	205,568	232,288	52,359
Cocoa	1,566,466	401,523	—	326,707	193,042	—	614,887	—	—	—
Coffee	1,861,513	34,204	—	—	31,038	—	582,948	—	—	—
Grain	20,168,886	17,470,989	12,554,439	236,884	6,145,462	3,567,107	534,397	4,841,685	4,432,111	1,385,374
Eggs	2,389,589	261,403	1,634,873	1,339,423	14,316	1,363,912	155,675	8,007	83,056	424,758
Fish	1,158,088	1,218,376	606,591	200,661	—	113,423	46,935	—	—	143,855
Fruit	6,073,722	5,504,878	656,501	75,634	1,079,283	55,716	624,885	780,704	287,187	184,738
Lard	910,507	1,734,888	716,501	—	364,941	8,910	74,452	214,193	790,219	8,370
Margarine	119,441	351,953	936,714	930,479	12,796	138,588	—	—	—	146,822
MEAT:—										
Bacon	989,681	3,966,241	1,099,115	5,685,710	380,363	83,060	315,790	510,673	96,073	544,526
Beef, Fresh	5,684,340	5,280,279	232,738	23,642	13,038	—	1,953,290	122,790	—	195,825
" Salted		56,668	—	—	—	—	—	—	—	—
Hams	284,562	1,713,643	12,325	—	36,023	—	846,665	489,404	95,196	—
Mutton, Fresh	6,219,378	2,648,946	94,618	264,795	69,750	—	144,856	—	—	94,341
Pork, Fresh	654,307	28,776	—	151,929	—	88,442	516	—	—	23,767
" Salted		55,421	—	—	—	—	—	—	—	—
Rabbits	354,209	223,780	—	25,866	—	—	—	—	—	—
Unenumerated	488,303	656,165	60,61 ²	218,954	—	10,931	—	—	—	—
Preserved	1,686,991	770,820	64 ⁸	—	73,773	—	175,485	132,577	94,105	—
Milk, Condensed	902,790	162,586	2,067,760	116,302	89,671	59,966	—	—	138,249	196,750
Poultry and Game	496,866	62,238	35,294	110,958	—	—	31,369	—	—	—
Sugar	8,908,125	5,145,782	1,277,666	90,444	1,535,743	1,793,726	214,696	190,091	1,052,601	239,403
Vegetables	948,121	814,529	562,974	98,279	61,346	35,166	649,649	76,301	110,118	78,364

TABLE SHOWING THE TOTAL QUANTITIES OF THE
DIFFERENT FOOD STUFFS CONDEMNED DURING THE
YEAR 1913.

	Tons.	Cwts.	Qrs.	Lbs.
Beef, Mutton, Pork and Veal...	166	4	0	17
Offal (Beef Mutton, etc.) ...	66	9	1	17
Canned Goods	111	6	3	10
Fruit and Vegetables	1,201	13	3	12
Cereals	1,587	0	0	9
General (Fish, Poultry, Rabbits, etc.)	60	16	0	15
	3,193	10	1	24

Certification of Meat Products.

The increasing demand by the United States of America for meat foods has caused large quantities to be shipped from this country, either as transshipments or as foods prepared in this country; these are either as frozen meats or canned meats. The United States Bureau of Animal Industry in a notice issued recently concerning meat imports and the accompanying foreign inspection certificates has issued instructions as follows :—

“In the case of shipment through another foreign country, with the meat or meat food product thus transhipped, there shall be presented to the Bureau inspector the original certificate from the country of origin, or a certified copy thereof; together with a transshipment certificate signed by an authorised official of the government of the foreign country through which the product is transhipped. The transshipment certificate shall show the identity of such meat or meat food product, and that the same has been examined and inspected and not found to be unsound, unhealthful, unwholesome, or unfit for human food, and that at the time of

exportation from the country through which the product was transhipped the same contained no dye, chemical, preservative, or other ingredient not permitted by the regulations governing the meat inspection of the United States Department of Agriculture."

The Medical Officer has been authorised as certifying officer for meat and meat food products for export to the United States. A form of certificate has now been issued which has met with approval, this is as follows:—

"I hereby certify that the above mentioned Beef was subjected on importation to the usual examination by the Inspectors of the Liverpool Port Sanitary Authority, appointed under the Government Foreign Meat Regulations, and no evidences of disease or unsoundness were found. There was no evidence of the addition of any colouring matter, chemical preservative or other substances injurious to health, and as far as I am able to judge, the certificate of Messrs. is correct."*

The work of certifying takes up a large amount of time of the Officers of the Authority. The duties consist of obtaining satisfactory evidence as to the identity and soundness of consignments, such as submitting samples to the Analyst for evidence of prohibited preservatives, etc. The work attached to the clerical staff in preparing and recording these certificates has been considerable. About 500 certificates have been issued during the year 1913.

The importance of this certificate from a commercial standpoint has made it imperative to give the latest information in this report, so that shipowners and merchants may have the present views on this matter.

* At the moment of going to press the Federal Meat Inspection Service has issued another notice (Circular letter 487, Feb. 1914), amending its recent meat import regulation. These requirements are now limited to meats unloaded at Liverpool for storing, processing, curing, canning, rendering, etc. Meats ordinarily transhipped in the course of traffic will not need this certificate, and can be passed through with only the certificate from the country of their origin.

As in previous years, the various bodies connected with the administration of the Port, viz., H.M. Collector of Customs and staff, the Mersey Docks and Harbour Board and their officers, and the various Shipping Companies, have co-operated with the Port Sanitary Authority in preventing disease, and have worked harmoniously together in every particular. The Consular Body have at all times given courteous assistance.

E. W. HOPE, M.D.

MUNICIPAL OFFICES,

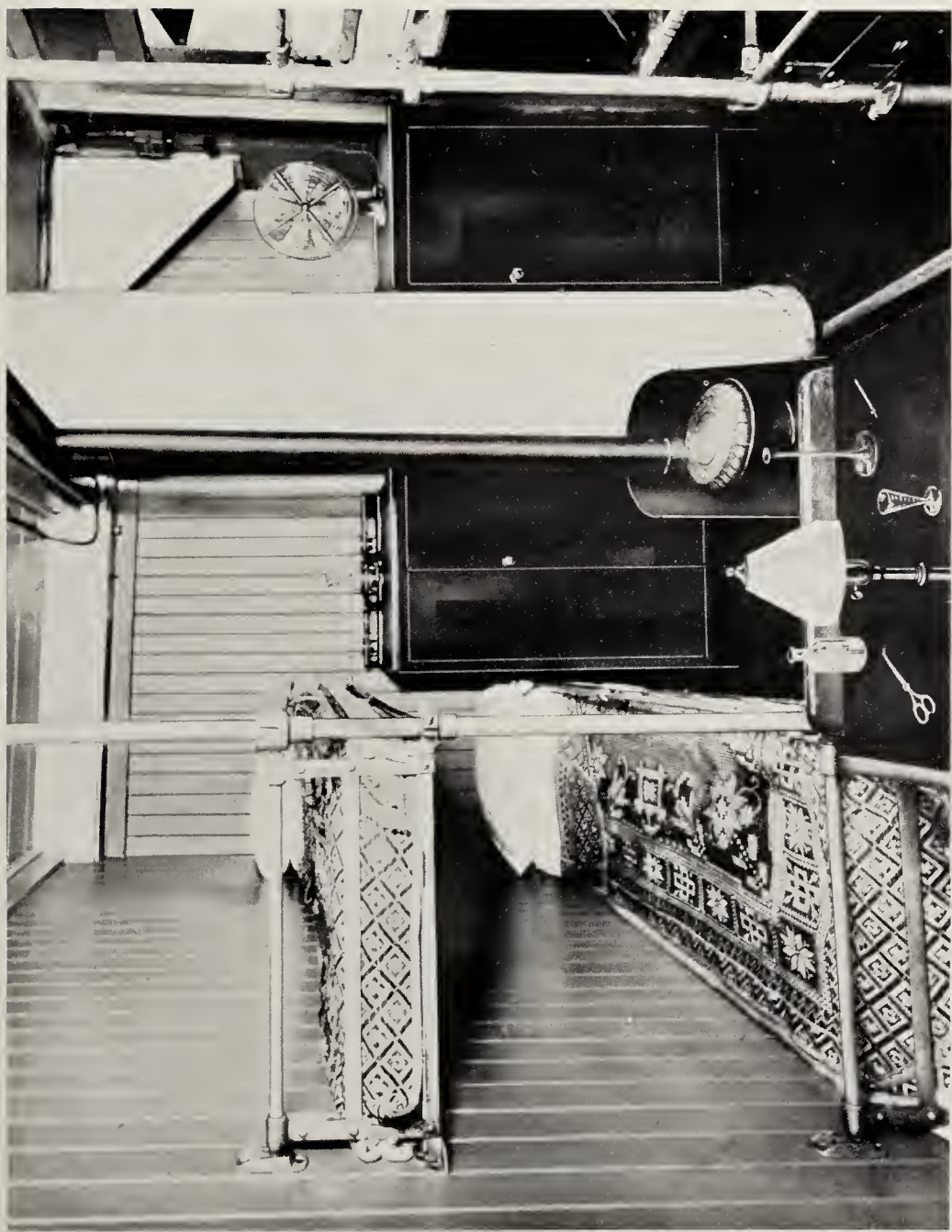
LIVERPOOL, *26th March*, 1914.



Landing Jamaica bananas at Garston Dock, Liverpool.



Interior of maturing room for Jamaica bananas. Garston Dock, Liverpool.

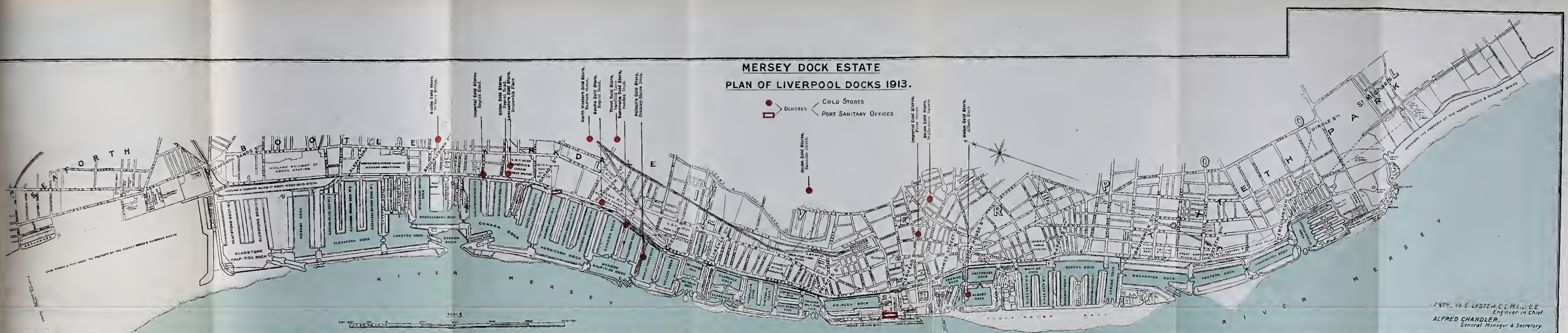


Isolation hospital, with four bunks, on the S.S. "British Monarch."

MERSEY DOCK ESTATE
PLAN OF LIVERPOOL DOCKS 1913.



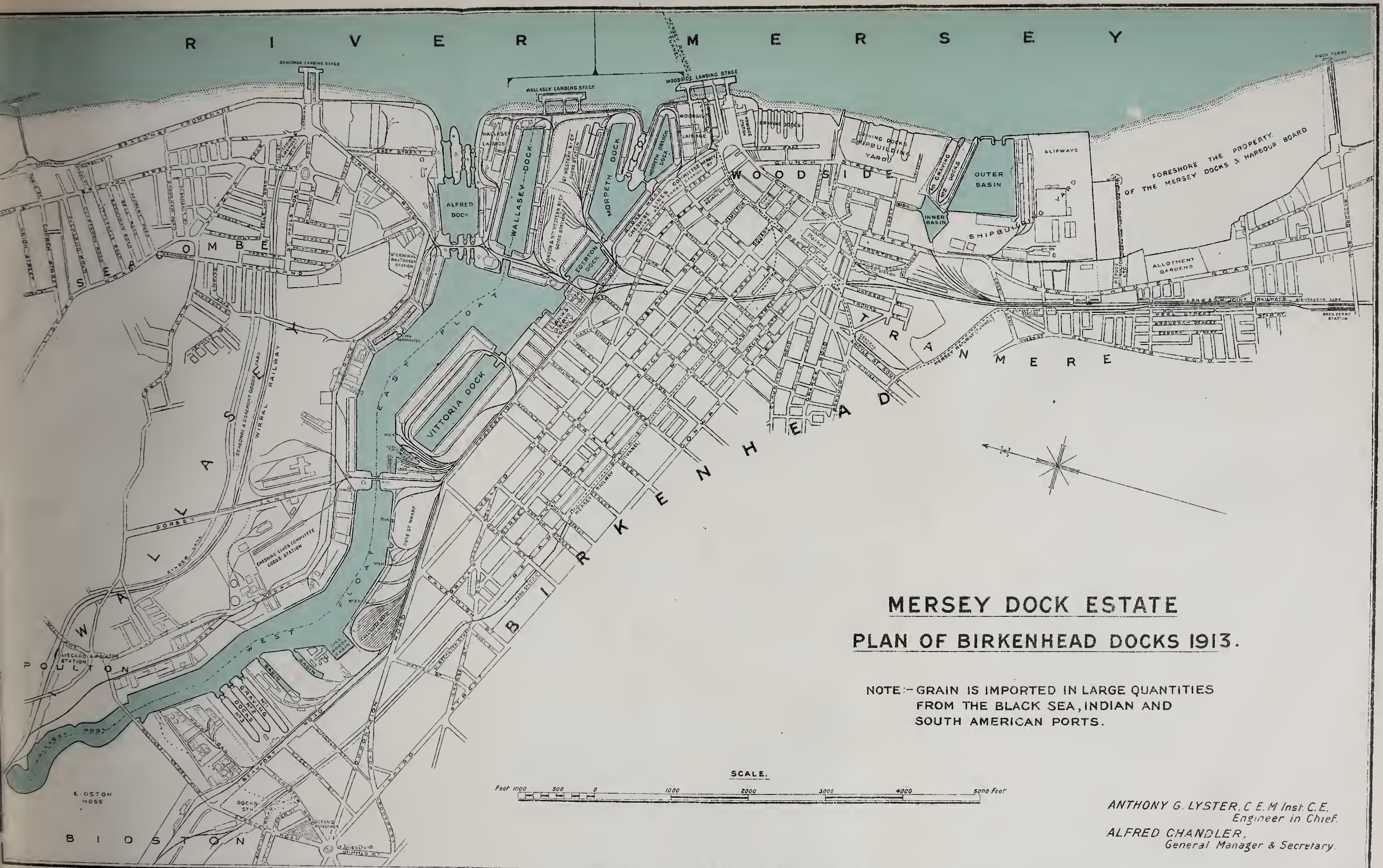
 DENOTES
  COLD STORES
 PORT SANITARY OFFICES



ALFRED CHANDLER,
General Manager & Secretary.

[illegible]







SPECIAL REPORT ON ACTINOMYCOSIS (Ray Fungus Disease) AND TUBERCULOSIS IN IMPORTED SOUTH AMERICAN OX TONGUES.

CIRCUMSTANCES OF OCCURRENCE.

About the middle of June, 1913, the food inspectors of the Liverpool Port Sanitary Authority, in the course of their usual routine sampling of food products landed in the docks, came across evidences of the presence of diseased conditions in the frozen ox-tongues from South America.*

A careful examination of several consignments showed that the tongues were in some cases extensively diseased; many of the diseased areas were in the blade alone, others in the lymphatic glands alone, and occasionally both blade and lymphatic glands were affected.

To the naked eye the lesions in the blade appeared to resemble early stages of actinomycosis, or "wooden" tongue; in the glands, whilst the majority were clearly of an actinomycotic nature, the lesions in some were extremely like tuberculosis of an advanced type, going on to suppuration or caseation and calcification.

NOTIFICATION OF LOCAL GOVERNMENT BOARD.

Information of the occurrence of these diseased conditions was forwarded to the Local Government Board, so that a systematic examination might be carried out simultaneously at each of the ports of entry.

Owing to the care required and the necessity for a detailed examination to be carried out, the various consignments, on arrival, were allowed to be placed in cold stores to be dealt with as time and circumstances would permit.

* From an examination of imported frozen United States ox tongues, it has been shown that actinomycosis is very prevalent amongst North American cattle.

DETAILED EXAMINATION IN COLD STORES.

The cases or bags of tongues, each of which contained from eight to twelve tongues, were slightly thawed out so as to ease the tongues for cutting. The food inspectors have spent a very arduous time in dealing with these foods, and the examination has proved very trying to the eyes, as the disease nodules are frequently very small.

The examination has extended over a considerable period of time and the following table has been drawn up to show the number examined up to the end of February, 1914:—

EXAMINATION OF SOUTH AMERICAN OX TONGUES UNTIL THE END OF FEBRUARY, 1914.

Importer.	Tongues Examined.	Diseased.	Percentage diseased.
A ₁	19,284	515	2·6
A ₂	3,972	43	1·08
B ₁	54,270	1,624	2·9
B ₂	8,162	28	·35
C	1,668	45	2·6
D	27,240	804	2·1
E	26,272	627	2·4
F	3,393	79	2·3
G	3,240	44	1·3
	147,501	3,809	2·5%

The total number of tongues examined by the Port Food Inspectors is 147,501, and of these 3,809 were found to be diseased; the proportion of diseased tongues is therefore 2·5 per cent. The amount of diseased tongues in different consignments varied from time to time; some importations have reached a comparatively high figure from the beginning, whilst others have shown great improvement since attention was first drawn to their condition. Whilst 2·5 per cent. of diseased tongues is reached in the aggregate of the examinations, some firms still import tongues showing a much higher amount of disease.

An examination to ascertain the relative prevalence of the disease in the blade and lymphatic glands was made, and it was found that the glands were approximately three times more frequently affected than the blade of the tongue, whilst disease affecting blade and gland at the same time was much rarer.

The lymphatic glands at each side of the tongue at the base were incised and examined for evidences of disease, the blade of the tongue was also carefully inspected, any nodules or abrasions received special examination.

LYMPHATIC GLANDS AFFECTED.

In the glands the tissues being softer and more easily broken down, the occurrence of the disease soon led to the presence of pus, caseation or calcification; in fact, the condition of the glands on section presented the following six stages:—

1. Very early stage, small nodules with a little fibrous tissue.
2. One or two small nodules (more advanced). On pressure being put on the gland the nodules became more prominent, this stage may be described as the early mulberry stage.
3. Mulberry type more advanced.
4. Mulberry type more advanced and beginning to break down, and slightly streaked with yellow.
5. Suppuration advanced and moist, the pus in the abscess frequently resembling yolk of egg.
6. Advanced caseating glands, in the majority it was a dry caseation; these caseating glands could not be distinguished from advanced tuberculosis.

The lymphatic glands affected were chiefly the submaxillary, the pharyngeal group of glands was also frequently affected. It has also been noted that in importations of ox cheeks from South America that some of the cheeks have submaxillary glands attached, these showed evidence of actinomycotic disease.

BLADES OF TONGUES AFFECTED.

The nodules in the blade of the tongue were, as a rule, small areas of fibrous tissue about the size of a pea or smaller, and were usually found scattered in the superficial areas of the tongue blade, either under the tip, or at the sides toward the root; frequently scars were found at various points, and these often indicated to the inspector that nodules would be found on section; besides, when the tongue was thawed out, the nodules could frequently be felt without any incision.

In the interior of these hard fibrous nodules in the blade, one could frequently discover a few purulent or caseo-calcareous granular areas of very small size; these were quite typical of early actinomycotic lesions.

MICROSCOPICAL AND EXPERIMENTAL EXAMINATION.

It was found to be impossible to correctly diagnose the conditions found without the aid of microscopical and experimental examination, especially as the possibility of the presence of tuberculosis could not be excluded; this was especially the case in those lymphatic glands showing later stages of disease with pus or caseous and caseo-calcareous stages. Accordingly, arrangements were made with Professor Beattie, of the bacteriological department of Liverpool University, to have this work carried out. His report is appended on page .

Forty-five tongues and glands were sent to Professor Beattie for histological examination, and as he explains in his report, a further series of 31 tongues and glands were utilised by Dr. D. Moore Alexander, deputy bacteriologist, for inoculation purposes. This latter series of tongues and glands, with nine others, were examined by Dr. Hanna for evidences of actinomycosis and acid-fast bacilli. His results are incorporated in the table attached to Dr. D. Moore Alexander's report.

DEFINITE PRESENCE OF ACTINOMYCOSIS AND ACID-FAST BACILLI.

The earlier specimens examined clearly showed that the actinomycosis fungus of the type usually found in such lesions was present, namely, the presence of the small microscopic rosette-shaped masses, around whose margins are found the characteristic thickened filaments or club-shaped bodies which can be readily stained with Grams' or other method. Of 85 South American tongues or glands presenting naked eye lesions examined for the fungus, 45 were found to be actinomycotic. Of 84 specimens examined for acid-fast bacilli, 17 gave a positive result.

Having decided that both Actinomycosis and acid fast bacilli (possibly of tuberculosis) were present by microscopical examination, it was necessary to determine whether the presence of tuberculosis could be revealed by animal experimentation, and further, whether these diseases were still active and capable of transmission to animals after the lapse of several months at a temperature of -12° C. in cold storage.

DEFINITE PRESENCE OF TUBERCULOSIS.

Of 31 experimental inoculations, in the majority in duplicate, carried out with pus or caseating material obtained from tongues and glands, in 21 cases generalised tuberculosis was produced; in other words, living tubercle bacilli were detected in 67·7 per cent. of tongues, which showed advanced purulent, caseating or caseo-calcareous, areas.

The comparatively high percentage shown as regards tuberculosis must not be taken as an index of the occurrence of this disease in the imported tongues. As previously mentioned, after the earlier nodular samples had been definitely diagnosed as actinomycotic, it was necessary to determine whether the purulent and caseous tongues and glands were tuberculous, and accordingly these specimens of advanced disease were always selected for examination and this accounts for the very high percentage recorded.

The result is very interesting as showing that the temperature at which refrigerated goods are imported, whilst rendering dormant the activities of organisms, has very little effect in destroying their life and pathogenicity.

MIXED INFECTION (ACTINOMYCOSIS AND TUBERCULOSIS).

It is interesting to note that whilst the great majority of the glands and tongues which showed actinomycosis fungus microscopically did not cause any tubercle, in seven cases (tongues G.H.O.Q.R.BB. and DD.) both diseases were present. Material taken from actinomycotic areas in the blades of two tongues, G. and I., gave negative results on inoculation, both as regards actinomycosis and tubercle.

Material (pus from glands and tissues), taken from the animals tested was examined in the majority of cases both microscopically and by culture. Acid-fast bacilli were demonstrated in nearly all those cases where generalised tuberculosis developed.

CULTURE EXPERIMENTS.

No evidence of growth or presence of actinomycosis fungus was obtained from any of the animals on culture, but cultures of tubercle bacilli were obtained in nine cases.

The experiments prove that actinomycosis, as found in the tissues, could not be transmitted to guinea pigs, the fungus evidently not being sufficiently virulent to give rise to any progressive lesions.

CHARACTER OF ACTINOMYCOSIS.

Actinomycosis is a diseased condition produced by the growth of a highly developed bacterial fungus belonging to the group *Trichomyces*, which gradually invades the tissues of the body. It is chiefly observed in domestic animals, e.g., cattle, pigs, etc., and also, but rarely in man. It is widely distributed abroad, and it had been stated that in Italy it has been found more frequently present after an outbreak of foot-and-mouth disease owing to the presence of ulcers in the mouths of animals affording suitable site for infection.

The fungus when developing in the tissues gives rise to an inflammatory reaction with the formation of granulation tissue and fibrous nodules; a gradual degeneration occurs in the centre of these nodules which may break down into pus, and the fungus, growing in microscopic tufts may be discharged from the abscess; at other times large tumour-like growths appear in the jaws or neighbourhood.

ENTRANCE OF FUNGUS AND SITE OF DISEASE.

The fungus (*Ray fungus*) is originally found in plants, e.g., wall barley and other grasses, but this has not been definitely settled, it may enter the body in various ways. It seems to be fairly well established that cattle become infected only when they are fed on dry food, it may therefore arise from the consumption of hay, straw, or similar fodder.

The following is an interesting extract from a letter to Dr. Hanna from a resident in Argentine with regard to this matter:—

“ With regard to the disease you call the ray fungus disease with which some of the ox tongues from South America are affected, I may say that I have noticed it and at first was puzzled by it, and

wondered whether it was the result of the foot-and-mouth disease, until I noticed it in cattle that never had foot-and-mouth disease. Then I attributed it to the hard grass on which our cattle have sometimes to depend in winter. This coarse grass which is pretty general all over the country is a hard, wiry, dry grass which we call "Puna" grass, and often in summer, after a hard winter, we have trouble with tumours in the mouths and throats of our cattle caused by little spikes of this grass sticking into the glands, etc., and I should say what you call ray fungus is the healed laceration caused at the root of the tongue by the Puna grass.

"The percentage you mention as being affected rather confirmed me in my opinion. Because although nearly all the cattle that we send home chilled and frozen for the English Market are bred on the alfalfa lands, yet a great number of cattle are bred in the southern non-alfalfa lands, and are taken up to alfalfa lands to fatten when about 14 or 18 months old, and in many cases, especially of later years, these animals will have suffered hunger and been forced to eat this coarse grass, and their tongues would be affected before they came on the soft alfalfa feeding.

"The cattle feeding out in the Argentine at present consists almost entirely of grazing, in very few cases is hay given, and then it is generally alfalfa hay."

The fungus may attack any portion of the alimentary canal by entering small wounds or abrasions of the mucous membrane; it may also enter the gums or tissues of animals during the shedding of milk teeth, or in a decayed tooth.

When the spikelets or awns of the grass enter wounds it is extremely difficult to remove them, owing to their siliceous barbs which project and hold the awns fast.

The disease may also enter the lungs or settle in the udder through injuries during suckling, this especially in the case of sows.

The parts chiefly affected in this country are the jaws, mouth, throat, tongue, lymphatic glands and udder, also the skin and intestinal canal. In the tongue it usually gives rise to "wooden tongue," a chronic inflammation associated with the formation of a large amount of fibrous tissues with actinomycotic nodules distributed throughout the organ; the lymphatic glands may become affected.

TRANSMISSIBILITY TO MAN AND ANIMALS.

Actinomycosis cannot be considered as a contagious disease for cattle, and it has been stated that the fungus loses its power of transmission when it has developed in the animal body, probably due to some change in its mode of growth.

The negative character of the results of the inoculations detailed above lend weight to this view. The disease attacks human beings, and it is from this fact that much interest attaches to it, but the infection will probably arise from a similar source as that in the case of cattle, namely, through straw, grass or dust. The site of the disease in man corresponds fairly well with that in animals, i.e., the disease is localised in the skin, tongue, jaws, lungs (where it may simulate phthisis), it may even extend down the neck to the chest cavity. The disease may also attack any portion of the alimentary canal, and in fatal cases is frequently generalised.

OCCURRENCE IN MAN.

From some enquiries which have been made there have been, during the past five years, 8 deaths recorded from this disease in the City of Liverpool. There can be no doubt, however, that owing to difficulty in diagnosis, this figure is too low, for many cases must have been registered as having died from other causes.

Through the kindness of Professor E. Glynn, of the Liverpool Royal Infirmary, it has been possible to show the figures as far as obtainable for this hospital, the return shows ten cases which were absolutely diagnosed by the finding of the fungus in each case. Five of these cases died, and five were cured. He considers the disease fairly common, if only the possibility of finding the organism were kept in mind by pathologists. Two were only diagnosed on post mortem examination. Professor Glynn has also supplied details of occupation in these cases.

Cases of Actinomycosis occurring during the last five years (1909-May, 1914) in the Royal Infirmary.

Fatal Cases.

P.M. 75 W.H., Male, aet. 22, July 6th, 1909. Pyaemia, Liver, Lungs and Brain affected. Occupation, labourer.

P.M. 18 S.D., Male, aet. 47, Feb. 18th, 1910. Sella turcica and orbits (Published Quart. Journ. Med. by Dr. Abram). Occupation, signalman.

P.M. 44 M.S., Female, aet. 38, May 20th, 1911. Pyaemia, Lungs, Liver, Kidney, apparently started through gut infection.

P.M. 50 J.S., Male, aet. 16, April 26th, 1912. Pyaemia, Liver, Lungs and Kidneys, probably started in the appendix region. Occupation, pawnbroker's assistant.

P.M. 95 A.S., Male, aet. 17, October 7th, 1912. Pyaemia, Lungs, Pericardium, Kidneys and Liver. Occupation, waiter.

Cured Cases.

Rep. No. 4002 T.S., Male, aet. 20, Arm, followed bite; arm amputated February, 1912.

Rep. No. 4119 J.C., Male, aet. 63, April 16th, 1912. Occupation, hairdresser.

Rep. No. 4171 R., Male, aet. 50. Head, May 11th, 1912. Occupation, tram conductor.

Rep. No. 5717 W.D., Male, aet. ? March 18th, 1914, Lung. Occupation, labourer.

Rep. No. 1450 P.C., Male, aet. 20, Jan. 3rd, 1911. Neck (Mr. Thelwall Thomas' case). Occupation, miner.

A death occurred in the Royal Southern Hospital, Liverpool, in 1912, from actinomycosis of the neck. The patient was a teamowner, and had been ill about three months.

Two deaths from this disease were registered during the past five years from private addresses in the City. These were a gas engineer, 35 years of age, who had actinomycosis of the hip, spine, and necrosis of the jaw. The other case was a female clerk-in-charge of a telephone exchange in the city; she had actinomycosis of the lungs, and was ill about 18 months. Dr. D. Moore Alexander reports that he has seen three cases in which the patient had been bitten by a cow and developed actinomycosis afterwards in the bone.

It would seem therefore that human beings are liable to be infected, not only in a similar manner to animals, but that infection may be transmitted from animals to man through bites and similar methods of inoculation.

There is even some reason to believe that the disease may occur as small outbreaks, both in cattle and man, owing to consumption or contact of contaminated material, such as straw, etc.

From the returns given above, the occupations of the patients throw very little light on the source of infection in these cases.

No cases of actinomycosis have ever come to light where those infected had consumed meat affected with this disease.

In order to detect diseased conditions, it has been customary with the Liverpool Port Sanitary Authority to insist on the presence of all the lymphatic glands in situ in all classes of meats. This has been carried out in nearly all necessary cases, but with regard to ox tongues some improvement is still required.

A large proportion of South American tongues have the lymphatic glands attached, but United States tongues have been trimmed and imported without these glands.

The percentage of actinomycosis in the blade of United States tongues has in some cases reached a comparatively high figure, and there can be no doubt that if these glands were left attached many more would be rejected.

This important matter will no doubt receive before long the attention of the Local Government Board.

Some time was required to bring this report to a stage when some useful work could be made public. A detailed and important series of experiments had to be carried out to determine certain doubtful questions, and hence the report has been necessarily delayed.

The following conclusions may be drawn:—

1. Diseased conditions are present in South American tongues to an extent of 2·5 per cent.

No doubt many tongues are rejected by the inspectors in South America, especially those which show extensive lesions in the blade of the tongue. Recent importations show that the majority of these tongues are being more carefully inspected; the glands are frequently incised and properly skewered in position.

2. Actinomycosis (Ray fungus disease) is present in South American tongues, and must be fairly prevalent among the cattle.

3. Tuberculosis is also present among these infected South American tongues; all those glands which showed caseous or calcareo-caseous nodules were submitted to experimental examination with the result that 67·7 per cent. produced generalised tuberculosis in guinea pigs.

4. Seven cases of mixed infection (Actinomycosis and Tuberculosis) were found.

5. From the frequent presence of actinomycosis and tuberculosis in the lymphatic glands attached to imported frozen tongues, it has become imperative that importers should see that all the glands are left attached to the tongues.

It is desired to express appreciation of the services and help afforded by the members of the staff, and especially those engaged in the arduous and actual inspection work in the Cold Stores.

E. W. HOPE, M.D.,

Port Medical Officer.

Offices of Port Sanitary Authority,

Pier Head, Liverpool,

May, 1914.

APPENDIX A.

REPORT UPON AND EXAMINATION OF SOUTH AMERICAN
TONGUES, BY PROFESSOR J. M. BEATTIE, CITY
BACTERIOLOGIST.

The following are the results of the examination of Tongues, Roots of Tongues and Glands, which have been submitted to me from the Port Sanitary Officials:—

REPORT ON SAMPLES OF TONGUES, GLANDS, AND ROOTS.

Date.	Nature of Specimen.	No. Sent.	Result of Examination.
1913.			
July 21	Glands	1	Actinomycosis.
Aug. 2	Glands	1	Actinomycosis.
„ 7	Ox Tongue and Glands	2	Actinomycosis absent in both.
„ 22	Ox Tongue and Glands	2	Actinomycosis present in both.
Oct. 4	Glands (A)	1	Tubercular.
„ 4	Glands (B)	1	Actinomycosis.
„ 4	Glands (C)	1	Actinomycosis.
„ 4	Glands (D)	1	Tubercular.
„ 4	Glands (E)	1	Tubercular.
„ 4	Glands (F)	1	Non-Tubercular—inflammatory.
„ 7	Glands and Ox Tongue	2	Chronic inflammation.
„ 7	Tongue	1	Tubercular.
„ 7	Tongue	1	No evidence of tubercle or actinomycosis—inflammatory.
„ 7	Tongue	1	Actinomycosis.
Nov. 4	Tongue and Glands	2	No evidence of actinomycosis in Tongue Glands Tubercular.
Nov. 6	Glands and Tongue	2	Both glands and tongue showed marked evidence of actinomycosis.
„ 27	Glands	1	Tubercular.
Dec. 4	Glands	1	Tubercular.
	Total	23	

Date.	Nature of Specimen.	No. Sent.	Result of Examination.
1914.			
Jan. 8 ...	Glands	6	Actinomycosis present in 5. Actinomycosis absent in 1.
„ 8 ...	Tongues	2	Actinomycosis present in 1. Actinomycosis absent in 1.
„ 28 ...	Tongues	3	Actinomycosis absent in 2. Actinomycosis absent in 1.
„ 28 ...	Roots	9	Actinomycosis present in 2. Actinomycosis absent in 6. Tubercle Bacilli present in 1.
May 6 ...	Glands	2	Actinomycosis absent in 2.
	Total in 1914 ...	22	
	Total in 1913 ...	23	
	Total	45	

Total in 1913 ...	...	...	...	23
Total in 1914 ...	...	...	...	22
Total ...	...	...	...	45

In many of these the lesions were quite obvious to the naked eye, even on superficial examination, but in all other cases the tongues were cut into small pieces, and careful search made for lesions. Where any pathological condition was seen, films and sections were made, and a positive diagnosis was given only after the streptothrix was seen in the tissues, or after histological characteristics of a tuberculous nodule had been demonstrated. In the tuberculous cases, particularly where giant cells and the other structures of a tubercle follicle were not clear, the diagnosis was also based on the finding of acid-fast bacilli having the morphological characters of *B. tuberculosis*.

In some of the early cases attempts were made at cultivation of the organisms, but as Dr. Hanna and Dr. Moore Alexander suggested to me that they wished to carry out a research on these lines I did not continue this more extended examination, but contented myself with establishing a diagnosis by histological means, knowing that such interesting questions as to the vitality, etc., of the organisms would be settled by these workers.

The report seems to me to be of extreme importance, and it is a very emphatic proof of the need of careful inspection of our food supplies. As Dr. Moore Alexander has shown, the organisms were active and produced pathogenic effects on animals. Some of the lesions were enclosed in dense fibrous tissue and others were calcified, and I think that in some of these cases it is even doubtful if ordinary cooking would have been sufficient to destroy these encased bacilli, and if the inspection had been desultory and these tongues had been allowed to pass, there is at least the possibility of the introduction of tuberculosis by this means, both to those who handled them, and to those using them as food. The actinomycosis is not so serious, for it is doubtful whether the type which occurred in these tongues is pathogenic to the human subject. Dr. Moore Alexander's report is attached.

APPENDIX A—continued.

REPORT UPON FORTY-SIX SOUTH AMERICAN
AND TWO NORTH AMERICAN OX TONGUES
AND TONGUE GLANDS EXAMINED FOR
ACTINOMYCOSIS AND TUBERCULOSIS

By D. Moore Alexander, M.D., Deputy Bacteriologist.

The material was collected from tongues which had been rejected by the Port Sanitary Authority of Liverpool, because they showed either hard nodules in the blade of the tongue, which were sometimes fibrous and at other times possessed caseous centres, or because the glands at the root of the tongue presented caseous or calcareo-caseous degeneration. Forty-six tongues were examined in one of three ways:—

1. By section only, 15; none of these showed pus; 11 of these were from the actual tongue itself, the remainder comprised sections of six enlarged glands from four tongues.

2. By section and animal inoculation, 27; two guinea pigs being inoculated with material from the blades of two tongues, the remaining 45 guinea pigs being inoculated with 28 glands, showing caseation, from the 27 tongues. Neither of the guinea pigs inoculated with the material from the blade of the tongue showed any lesions, although the gland from one of them produced general tuberculosis in the guinea pig.

3. By inoculation only, four South American tongues, all of which produced general tuberculosis in the guinea pig.

Therefore the total number of tongues examined by animal inoculation is 31, of which 21 proved to be tuberculous, being a percentage of 67·7 per cent.

Smears were usually made at the post mortem of the guinea pig from the caseous gland, spleen or the liver; and acid-fast organisms were found in a very high percentage of the inoculations made. Cultures were also attempted from the guinea pigs on to Dorset's egg medium, growths of acid-fast bacilli were successful on nine occasions.

Direct cultivation was attempted from 15 of the tongues on to various media, both aerobic and anaerobic without success, and as it is stated that cultures can only be obtained from those actinomycotic lesions in which filaments can be demonstrated; and since filaments were never demonstrable in the fresh pus from any of the tongues this method of investigation was soon abandoned.

For the purpose of comparison, two pigs' udders and two North American tongues were examined, and one pig's udder produced general tuberculosis in the guinea pig.

Since actinomycosis is not inoculable into a guinea pig, the presence or absence of this infection can only be judged by examining the sections, the results of which will be found in the accompanying table:—

TABLE SHOWING THE GENERAL RESULTS OF THE EXAMINATION
OF 46 DISEASED SOUTH AMERICAN OX TONGUES.

Number or distinguishing letter of Tongues.	Results of inoculation of pus from lymphatic glands attached to the Tongues.			Microscopical Examina- tion of sections of Tongues and Glands for Actino- mycosis and Acid-fast bacilli	
	Generalised Tuberculosis.	Acid-fast bacilli in smears from organs of Guinea-pig.	Culture of tubercle bacillus obtained from material.	Actinomycosis.	Acid-fast bacilli.
1	<div style="display: flex; align-items: center;"> <div style="font-size: 4em; margin-right: 10px;">}</div> <div> <p>These tongues showed the usual actino- mycotic nodules, and no evidence of pus or marked caseation was visible. They were not tested by inoculation.</p> </div> </div>			+	—
2				+	—
3				+	—
4				+	—
5				+	—
6				+	—
7				+	—
8				+	—
9				+	—
10				+	—
11				+	—

Number or distinguishing letter of Tongues.	Results of inoculation of pus from lymphatic glands attached to the Tongues.			Microscopical Examination of sections of Tongues and Glands for Actinomycosis and Acid-fast bacilli	
	Generalised Tuberculosis.	Acid-fast bacilli in smears from organs of Guinea-pig.	Culture of tubercle bacillus obtained from material.	Actinomycosis.	Acid-fast bacilli.
12	+ 1	These were 4 glands from tongues which showed marked cascating areas resembling tuberculosis.		Not examined Microscopically.	
13	+ 1				
14	+ 1				
15	+ 1				
A	+ 1	+	—	—	—
B	— 2	...	...	+	—
C	+ 1	—	—	—	—
D	+ 2	+	+	—	+
E	— 2	...	...	—	—
F	+ 1	+	—	—	—
*G	+ 2	+	+	+	Not examined. +
H	+ 1	+	—	+	
*I	— 1	...	...	+	—
J	— 2	...	...	+	—
K	— 2	...	...	+	—
L	+ 2	+	+	—	+
M	— 1	...	...	+	—
N	— 2	...	...	+	—
O	+ 2	—	+	+	+
P section only.	Not tested.		...	—	—
Q	+ 2	+ 2	+	+	—
R	+ 1	—	Not tested.	+	—
S	— 1	...	...	—	—

Number or distinguishing letter of Tongues.	Results of inoculation of pus from lymphatic glands attached to the Tongues.			Microscopical Examination of sections of Tongues and Glands for Actinomycosis and Acid-fast bacilli	
	Generalised Tuberculosis.	Acid-fast bacilli in smears from organs of Guinea-pig.	Culture of tubercle bacillus obtained from material.	Actinomycosis.	Acid-fast bacilli.
T	+ 2	+	—	—	+
U	+ 1	+	—	—	—
V	— 2	...	...	+	—
W	+ 2	+ 2	+	—	+
X	+ 2	+	+	—	+
Y	+ 2	Not tested	+	—	—
Z section only.		Not tested	Not tested	—	+ very numerous.
AA	— 2	...	...	+	—
BB	+ 1	—	Not tested	+	—
CC	— 1 acute septicaemia	...	...	...	...
DD	+ 2	—	+	+	—
EE	— 1 acute septicaemia	...	...	...	...

* Tongues G and I were also inoculated from the blade of the tongue with negative results in each case.

For comparison with the above results, two North American tongues and two pigs' udders were examined :—

North America Tongue FF	— 1	...	...	+	—
Pigs' udders GG		Not	inoculated	+	—
HH	+ 1	—	Not tested	Not	tested
North America Tongue II		Not	inoculated	+	—

+ = presence

— = absence

The small numeral, e.g., + 2, indicates that two inoculations were made

APPENDIX B.

PORT OF LIVERPOOL.

SANITARY AUTHORITY,

Memorandum on the Freezing and Packing of Boneless Meats in reference to Early Examination and Quick Despatch at Port of Entry.

To facilitate examination, the freezing and packing of boneless meats must be carefully attended to and the following points noted:—

A.—To facilitate the identification and character of goods for Customs and other purposes.

1. There must be a true declaration of the contents of the bag or package.

2.—Cuts of the same kind, only, must be placed in the same bag or package, there must be no mixture.

3.—The goods must be carefully manifested, giving the number of packages of each kind of cut to be found in the shipment.

B.—To facilitate Inspection.

1.—The parts must be frozen separately.

2.—Under Foreign Meat Regulations, Class 1, no Scraps or Trimmings can be imported.

It is particularly requested that the cuts of meat shall be as large as possible, and when boned, must be brought in as near as possible the natural shape, no rolling or folding can be allowed.

If the goods are found to be folded and rolled it will be necessary to thaw them out.

Cut of Meat	Shape in Freezing.	Serous Surfaces.	Glands.
Flanks	Frozen flat.	In the case of thin flanks the peritoneum to be left exposed.	—
Necks	Full necks, and natural shape as cut off the quarter.	—	—
Shins	A full shin; natural shape.	—	...
Buttocks	To be laid open to expose interior (not folded), this especially in the case of inferior quality of beef.	—	Popliteal gland to be exposed for examination.
Clods	Natural shape as cut from quarter.	Pleural surface not removed.	Preescapular gland to be exposed and left.
Loins	Natural shape as cut from quarter.	Peritoneal surface not removed.	Lumbar glands left in situ.
Loins and Flanks	Frozen flat.	Serous (peritoneal) surface not removed.	Lumbar glands left.
Chucks ...	Natural shape as cut from quarter.	If the cut be large, pleural surface to be left.	Preescapular gland to be left for examination.
Ribs.....	To be left flat after boning.	Pleural surface to be left (no stripping). It is inadvisable to remove the ribs and with them the pleural surface when boning this cut.	—
Middles ...	As ribs.	As ribs.	As ribs.
Shoulders	Ought to be cut large and frozen flat.	If cut through the chest cavity, membrane and glands to be left.	Where glands present to be left in situ.
Rumps ...	Left in natural shape and frozen.	—	Do.
Briskets ...	Frozen flat, no folding.	Membrane left in situ.	Glands left in situ.

Cheeks.

Livers.

Tripe.

Kidneys (beef).

Tongues.

Skirts (with pleura and peritoneum).

Tails.

Hearts.

Plucks.

Other boxed meats.

Full Cheeks frozen separately, no scraps.

These are to be frozen separately, so that each organ, or part, when hard frozen, may be easily removable from the bag or box for examination.

APPENDIX C.**CLASSIFICATION OF FRUITS, ETC.****ORANGES.**

Chalk I. 2 % or 8 bad oranges in cases of 420, or 14 in case of 714.
 Chalk II. 5 % or 20 bad oranges in cases of 420, or 35 in case of 714.
 Chalk III. 10 % or 40 bad oranges in cases of 420, or 70 in case of 714.
 Chalk X. 25 % or 100 bad oranges in cases of 420, or 170 in case of 714.
 Chalk XX. 50 % or 200 bad oranges in cases of 420, or 350 in case of 714.
 Wasty.—All above 50 %

APPLES.

Tight applies to all full and sound barrels or boxes.
 Slack I. „ short and dry barrels or boxes.
 Wet II. „ partly decomposed barrels or boxes.
 Slack and Wet III. „ partly decomposed barrels or boxes.
 Worthless IIII.

GRAPES.

No. Mark	Sound.
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III.	Wet.
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B.	Bilged.
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W.	Wastys.
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WHEAT.

Sound.

1st class damaged	—
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2nd	„	(Bilge or sea water) ... Sour.
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3rd	„ Sour and mouldy.
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4th	„ Lumpy, mouldy, sour, &c.
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APPENDIX D.**HOSPITALS ON BOARD EMIGRANT SHIPS.**

The regulations respecting hospitals on emigrant ships, made under section 17 of the Merchant Shipping Act, 1906, are as follows:—

Sufficient space shall be set apart in every emigrant ship for use exclusively as hospital accommodation for the steerage passengers, being properly divided off from other living quarters to the satisfaction of the emigration officer at the port of clearance. At least one hospital shall be set apart for infectious diseases.

The spaces set apart for such hospital accommodation shall be on or above the uppermost passenger deck, and shall be placed to the satisfaction of the emigration officer at the port of clearance. The space set aside as an infectious hospital shall be in as isolated a situation as possible.

The space so set apart shall contain not less than eighteen clear superficial feet for every fifty steerage passengers whom the ship carries; and shall be fitted with bed places, and supplied with proper beds, bedding, and utensils to the satisfaction of the emigration officer at the port of clearance, and shall throughout the voyage be kept so fitted and supplied. In no case shall the hospital space be less than one hundred superficial feet, but in vessels where the steerage passengers do not exceed two hundred in number there need not be more than two hospitals, including the one for infectious cases.

If any of these regulations is not complied with in the case of any emigrant ship, the owner, charterer, or master of the ship, or any of them is, under the provisions of Sub-section 2 of Section 293 of the Merchant Shipping Act, 1894, liable for each offence to a fine not exceeding £50.

CITY AND PORT OF LIVERPOOL.
RETURN OF RATS CAUGHT, EXAMINED OR DESTROYED.

Number of rats caught (City)	10,740
Number of rats examined (City)	3,738
Number of rats caught (Port)	8,901
Number of rats examined (Port)	4,218
Total Number of rats caught (City and Port)	19,641
Total Number of rats examined (City and Port)	7,956

* Occasionally samples of rats are sent for examination from sources which are not recorded in the above returns.

